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ABSTRACT

The study sought to develop an integrated training program for children with mongolism based on their observed assets and deficits. The program's three major curricular emphases were self care skills, language development, and motor development needed in recreational activities. The teaching techniques included task analysis, behavior modification, systematic language instruction, and errorless learning. Field testing of the systematic language instruction area of curriculum was conducted in nine classes for custodial and trainable mentally handicapped children in three states. Four teachers received extensive training and supervision; four other teachers received minimal supervision; and one teacher was supervised by long-distance contacts. As a control, four contrast teachers used different curricula. Research findings were that teachers not previously exposed to systematic language instruction could, with supervision, effectively use it, and that retarded children taught by the systematic language instruction achieved better on a set of language concepts than did children exposed to a different method. The study was concluded with the recommendation that a number of demonstration centers be developed. (For related programed instruction guidelines, see EC 040 486, 040 539-41.) (CB)

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SYSTEMATIC INSTRUCTION FOR RETARDED CHILDREN
THE ILLINOIS PROGRAM

Experimental Edition

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Champaign, Illinois

August, 1970

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FINAL REPORT ERRATA

Page	Line	Reads	Should Read
4	2 from bottom	criterion teaching	criterion testing
16	3	day schools and private schools	private day schools and public schools
	6	Program	Kit
18	5	Number of cells	Number of pairs of cells
21	12 from bottom	curriculum	curriculum (Maximum score = 149)
	10 from bottom	Sample	Sample (Maximum score = 97)
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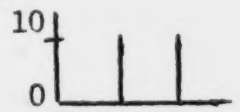
30	1	Figures 4, 6-10	Figures 5-10
32	Prerequisite Behaviors		
38	5	not taught at all	rarely taught
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	1 from bottom	5 d.f.	6 d.f.
42	1 from bottom	S.L.I.	Missouri Experimental
45	3, 6	5 d.f.	6 d.f.
	11, 16	2 and 9 d.f.	3 and 9 d.f.
	14	did differ	did not differ
49	19	One result... concept data	One result of this was that it was not possible to collect reliable concept data.
50	5	once	twice
55-56	bottom line on P. 55 through P. 56, lines 1-2	For example, the State of Illinois might be... basis,	For example, the State of Illinois is divided geographically into six Zones, each with a Zone Center, in order that mental health services would be available in or near the community in which an individual lives. A network of demonstration centers might effectively be established on a zone-by-zone basis,

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James C. Chalfant
Project Director

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ABSTRACT

Few curricula exist detailing specific procedures for teaching the young retarded child basic skills in language, self-help, and motor performance. The purpose of this project was to develop an integrated curriculum indicating specifically what parents, teachers, child care staff, and others say and do in teaching these skills. During the developmental phase (September, 1967 - August, 1969), an integrated curriculum in these areas was developed through interdisciplinary collaboration in an instructional program for ten Down's Syndrome children in residence at an Illinois Department of Mental Health Zone Center. The teaching techniques included task analysis, behavior modification, systematic language instruction, and errorless learning. During the field testing phase (September, 1969 - August, 1970), the Systematic Language Instruction (SLI) area of the curriculum was tested in nine classes for "subtrainable" and "trainable" retarded children in three different states. Four teachers received intensive training and supervision, and four others received minimal supervision relying primarily on the written curriculum. One teacher was supervised primarily through long-distance contacts, i.e., telephone calls, letters, and videotapes. Four contrast teachers used other curricula.

The data indicated that (a) teachers not previously exposed to Systematic Language Instruction techniques, given intensive supervision, understood and effectively used SLI, and (b) retarded children exposed to SLI techniques significantly exceeded the gains in mastery of a set of language concepts made in the same period of time by retarded children not exposed to SLI. It is recommended that a number of demonstration centers be developed on a gradual and systematic basis for the purposes of dissemination, training, further field testing and evaluation, and revision of curricular material in all three areas of instruction.

CHAPTER ONE

INTRODUCTION

Instructing retarded children has long posed a problem for parents and teachers. Even the "simple" skills which most children acquire early in life often prove difficult for those variously labeled "trainable," "subtrainable," or "pretrainable." Such children generally earn intelligence quotient scores of fifty and below. They often fail to understand what is said to them and say at most only a few words. In many cases they need assistance in eating, dressing and undressing themselves, and they are not completely toilet trained. Many retarded children at this level have difficulty in tasks requiring gross and fine motor coordination. Such children are generally placed in (a) public school classes for "trainable retarded children," (b) private day school classes for "pretrainable" or "subtrainable" retarded children, (c) special classrooms in state institutions, or (d) they live at home and do not receive formal classroom instruction. For purposes of simplicity, we will refer to this target population as "retarded children."

In summarizing the research evaluating instructional programs for "trainable" retarded children, Kirk (1964) reports that there is little evidence that these children are benefiting from such special programs or that the particular curriculum used makes much difference. These negative results have probably contributed to the attitude of pessimism concerning the effectiveness of special instruction for the "trainable" retarded. This negative attitude may have discouraged a number of individuals from developing and evaluating curricula (See Cain and Levine, 1963).

There are a number of problems which have made it difficult to determine the benefits of special class instruction for retarded children. These include: (a) lack of adequate measuring instruments which can be used to assess children who have mental levels below four years of age; (b) low prevalence of "trainable" retarded children, which makes it difficult to conduct experiments with randomized groups, (c) diversity of etiological factors; (d) shortage of experienced personnel; (e) lack of long term studies; and (f) the tendency to treat the "trainable" population as a single entity, with little regard for the learning characteristics of any particular individual.

Despite these essentially negative results there has recently been an increase in the number of public and private school classes and community mental health and mental retardation centers for retarded children. Thus, a situation has developed in which the increased number of classes for "trainable" children has not been paralleled by commensurate improvements in curriculum development.

The curricula which have been developed to date typically identify major instructional areas and list suggested teaching activities. In addition, they generally present logical sequences for meeting instructional objectives. Unfortunately, instructional objectives are often presented in general terms and do not take into account many of the child's necessary prerequisite behaviors. Also, teaching procedures are seldom described in sufficient detail so that the teacher knows precisely what to say and do in the classroom situation. Often, neither the reinforcement procedures for the child's appropriate responses nor the correction procedures for his inappropriate responses are indicated with any degree of specificity. In some cases, the materials which are supposed to be used are not readily available.

Thus, too often, individual experience remains the only guide for those who work intimately with retarded children. Indeed, a review of current educational practice in a variety of settings in Illinois and throughout the nation indicates that the great majority of teachers, aides, and parents of retarded children still lack specific information concerning what academic and self-help skills these children can learn and how they can be systematically and successfully taught.

Contributions to the instruction of retarded children have been made by special educators, psychologists, speech correctionists, recreation therapists, child care workers, and others. Unfortunately, there has been little collaboration among individuals in these disciplines towards developing comprehensive, integrated instructional programs for retarded children. This situation has contributed to compartmentalized instruction, in which each professional, for the most part, functions independently. The end result has been an inadequate amount of planning, coordination, and implementation of comprehensive instructional programs for retarded children.

A review of the "methods" books which have been written for practitioners in each of these disciplines often reveals a salutory acknowledgment of the existence of other disciplines. To date, there has not been a major effort to develop an effective teaching technology in which the various ideas and methods from different disciplines are integrated.

Purpose

The purpose of this project was to develop an instructional curriculum for retarded children, based upon the interdisciplinary collaboration among individuals in the areas of special education, psychology, speech correction, recreation, and child care.

A Rationale for Curriculum Development

There are a number of perspectives upon which the development of this curriculum has been based. The first is that retarded children are capable of learning many skills. At the present time, the upper limits of this learning are not clear. Bijou (1966) has described the retarded individual as one who has "a limited repertory of behavior shaped by events that constitute his history" (p. 2). From this point of view, it is philosophically unacceptable to define upper limits for retarded children. This means that a curriculum for the retarded must encompass a broad class of behaviors which can be taught by means of appropriate restructuring of environmental conditions. In the area of language, for example, the curriculum must account for the child with no vocal responses, as well as the young child who is capable of establishing reading responses.

A second perspective is that a curriculum should specify in detail the curricular content, the sequence of instruction, and the procedures by which these children should be taught.

Third, a comprehensive curriculum should integrate the contributions of those disciplines relevant to the child's educational environment. The advantages of an integrated curriculum include: (a) coordination in selecting the most appropriate instructional objectives and procedures; (b) consistency in using appropriate reinforcement techniques and correction procedures; and (c) mutual selection of criteria for assessing whether the child has achieved a given instructional objective.

A fourth perspective stems from the observation that many retarded children tend to perform more successfully on motor tasks in contrast to their lower performance on tasks requiring vocal responses. This behavioral pattern suggests that the retarded child's assets in motor performance may be utilized in helping him improve his comparatively low level of vocal functioning. The teaching principle around which the curriculum has been constructed is intended to establish correspondences between motor and vocal behavior through reinforcement techniques.

Fifth, a curriculum should develop from the interactions which occur between retarded children and those responsible for developing the curriculum. Retarded children generally have difficulty in learning

language, self-help, and motor performance skills. Project staff must deal with these problems by generating alternatives, applying these alternatives, and modifying or eliminating procedures whenever indicated.

A sixth perspective is to field test the completed curriculum to: (a) determine if it has been written clearly so that teachers can successfully implement it; (b) identify questions and problems teachers encountered in trying to employ the procedures; and (c) determine if children can learn from the specified procedures.

In summary, if one rejects the concept of establishing upper limits of ability, then the major task is to arrange the child's environment so that learning will occur at as rapid a rate as possible. Further, curriculum development must be concerned with procedures for structuring the environment as well as selecting content. The task is two-fold: tell the teacher what to teach and how to teach it. If this can be accomplished, the nature of instruction for the retarded may change significantly, and the performance of children may change as well. This project has been devoted to the development of an experimental curriculum for teaching retarded children.

The Curriculum: An Overview

The curriculum which has been developed is called SYSTEMATIC INSTRUCTION FOR RETARDED CHILDREN: THE ILLINOIS PROGRAM. There are four parts to the program. These are described as follows.

Part I: Teacher-Parent Guide

The guide is intended for use by teachers, child care staff, recreation personnel, and parents. It consists of five chapters. The first chapter describes how the Illinois Program was developed, the unique characteristics of the program, and some of its limitations. Chapter Two contains an outline of the curricula for language, self-help, and motor performance instruction. The third chapter presents procedures for the teacher to use in deciding what to teach. An explanation of how to use the lesson plans and basic teaching procedures is included in Chapter Four. The fifth chapter presents basic principles and procedures for conducting behavioral analysis and management.

Part II: Systematic Language Instruction

The Systematic Language Instruction curriculum consists of introductory material and a series of model lesson plans, each of which includes: (a) an instructional objective; (b) prerequisite behaviors; (c) materials; (d) criterion teaching procedures; and (e) teaching methods. These lesson plans provide specific procedures for instructing the retarded child.

Part III: Self-Help Instruction

The Self-Help curriculum includes introductory material and a series of model lesson plans for teaching dressing, dining, toilet training, and grooming skills. Each skill has been task analyzed and the lesson plans have been built around the various sub-steps. The principles of behavioral analysis are applied in teaching these skills.

Part IV: Motor Performance and Recreation Instruction

The Motor Performance and Recreation curriculum includes an analysis of basic motor skills. Model lesson plans have been developed for teaching skills in basic movement, rhythm, basic arts and crafts, and other miscellaneous motor performance activities. This curriculum highlights both the complexity of most motor performance tasks and the need to be aware of the sub-skills in the behavioral chain which makes up each motor task.

The Illinois Program has a number of important characteristics. First, it represents an attempt to develop an integrated program in which the daily efforts of all individuals who come into contact with the child can be interrelated. Thus, the child's instructional curricula in language, self-help skills, and motor performance may be closely integrated, so that the child is working on a limited number of instructional objectives and the individuals who are working with the child complement rather than compete with each other.

When teaching a skill, each staff member should have confidence that this same skill is being reinforced by other staff members and the child's parents. Also, the repeated exposure to the same teaching procedures and content in different settings helps the child learn and maintain the skills which are being taught. Finally, the likelihood that the child will become confused from exposure to varying teaching techniques is lessened.

Integration and communication require great effort on the part of the staff. Once the initial mechanisms for coordination have been established, the time involved in subsequent coordination activities can be greatly reduced. It should be noted, however, that it is necessary to allocate time at the beginning for the express purpose of coordination. If time is not reserved for this purpose, staff members may find it difficult to communicate with one another in planning educational programs for individual children.

Second, an attempt was made to select relevant content which is consistent with the needs of the young retarded child.

A third characteristic of the Illinois Program is the use of task analysis for breaking-down learning tasks into their sub-steps.

Fourth, behavioral objectives have been specified and guidelines for presenting instructional sequences have been developed.

Fifth, the concept of errorless learning has been incorporated in order to help the parent or teacher take the child from one sub-skill to the next in a logical step-by-step sequence. The steps are small, so that the child has to learn only one new skill at a time as he performs increasingly more complex behaviors. If the child's instructional program is carefully planned, and if he is systematically reinforced as he progresses through the curriculum, the number of errors he makes will be minimized and his learning maximized.

Sixth, reinforcement procedures are used to maintain desirable behaviors and to extinguish undesirable behaviors. There is an emphasis on the positive aspects of the learning situation so that the child learns that task-relevant behavior pays off and teacher and child find the learning process to be mutually reinforcing.

Seventh, correction procedures have been included to assist the child in learning appropriate behaviors.

Eighth, the curriculum specifies the use of economic and systematic language. What is said to and by the child is reduced to simple understandable statements. The parent or teacher builds up the child's motor and vocal language repertoires gradually and systematically. What is said is consistent among all individuals working with the child from day to day.

Ninth, teaching to criteria helps determine if the child has achieved the objectives of instruction.

In summary, the Illinois Program represents an attempt to integrate a variety of philosophies, theoretical assumptions, and practical approaches. This integrated curriculum is the end product of the collaboration of individuals from several different disciplines. Many necessary compromises were made over the three year duration of the project. For this reason, the reader can probably find some ideas or procedures with which he agrees and others with which he would take issue. It is our hope that the Illinois Program will stimulate the development of new and more effective methods for teaching retarded children.

Organization of Final Report

The time period during which the Illinois Program was developed can be divided into two phases:

(a) The Developmental Phase (September, 1967 - August, 1969), during which the pilot curriculum was developed, and

(b) The Field Testing Phase (September, 1969 - August, 1970), during which Systematic Language Instruction was field tested and revised.

The second and third chapters describe the activities during the Developmental and Field Testing Phases respectively. Chapter Four presents the conclusions and recommendations based on the three-year curriculum development project.

CHAPTER TWO

THE DEVELOPMENTAL PHASE

An experimental analysis of the behavioral capabilities of retarded children has provided direction for the Developmental Phase of the project. Evidence indicates that retarded children are generally more effective in tasks requiring motor skills than in those requiring vocal skills. Down's Syndrome children, as a group, seem to typify most clearly this observed discrepancy between "high motor" and "low vocal" behavior in retardates. This pattern implies a dissociation of what Luria (1963) calls the two "signal systems," motor and speech.

Several studies support this notion. In 1954, McNeill studied the developmental patterns of both institutionalized and home-reared Down's Syndrome children. McNeill obtained measures of height, weight, strength of grip, mental age, social maturity and motor coordination. In both groups, motor functions such as grip and coordination tended to be higher than verbal functions such as vocabulary and mental abilities.

Stedman and Eichorn (1964) conducted a similar study. Ten institutionalized children were compared with ten non-institutionalized children. All subjects were Down's Syndrome children between 17 and 37 months of age. The twenty youngsters were evaluated on mental development, motor development, social maturity and anthropometric measures. Stedman and Eichorn's results are similar to those obtained by McNeill.

It is interesting to note that both McNeill's institutionalized group and Stedman and Eichorn's hospital children showed marked differences between motor and verbal scores. Both studies suggest that in Down's Syndrome children motor ability is at a higher level than verbal expressive ability. The difference is not clear-cut because of the global nature of the instruments used. The following studies, however, used a less global measure and more clearly delineate this difference.

McCarthy (1965) compared the profiles of Down's Syndrome children and non-Down's Syndrome children on the Illinois Test of Psycholinguistic Abilities. The results indicated that:

(a) The Down's Syndrome group showed significantly superior abilities in motor encoding (motor expression) as compared to their other psycholinguistic abilities.

(b) In particular, motor encoding was superior to vocal encoding. This result was not observed in the non-Down's Syndrome children.

(c) The Down's Syndrome group showed a wider discrepancy in abilities with more assets and more disabilities than the non-Down's Syndrome group. Within the Down's Syndrome group, the patterns of psycholinguistic abilities and disabilities were significantly more homogeneous than those in the non-Down's Syndrome group.

This psycholinguistic pattern in Down's Syndrome children was also found in a study by Bilovsky and Share (1965). Whereas McCarthy reported her results in terms of age norms, Bilovsky and Share reported their results in terms of average deviation of the subjects from their own language age norms. Once again, the superiority of motor encoding is evident.

Although diverse measures of motor and vocal functioning were used in these four studies, the overall effect is to demonstrate that Down's Syndrome chidren typically have relatively highly developed repertoires of motor behaviors and poorly developed sets of vocal behaviors. This purported superiority of Down's Syndrome children on motor tasks suggests a "strength" on which vocal behaviors can be built. It is recognized that there is extreme variability of behaviors within this group. Nevertheless, Down's Syndrome children, when compared to other groups found in institutions and public school classes, appear to be relatively homogeneous on a number of characteristics. It would appear feasible to utilize this population to initiate the development of a curriculum based on children's strength in motor expression.

Purpose

The purpose of the Developmental Phase was to develop a comprehensive curriculum for use with young Down's Syndrome children. It was proposed that the curriculum consist of (a) a systematic program of language training; (b) an intensive program for teaching self-help skills such as eating, toileting, and dressing; and (c) the use of recreational activities to assist in the development of language, motor, and social skills.

Procedure

The Developmental Phase of this study can be broken down into three time periods. This section includes a description of: (a) pre-instructional

activities; (b) instructional activities for Down's Syndrome subjects; and (c) post-instructional activities.

Pre-Instructional Activities (September, 1967 - January, 1968)

Before instruction with the experimental subjects could take place, several preparatory activities were necessary. These included:

(a) Visits to local institutions and public and private day school programs, to observe current educational practices with Down's Syndrome and other retarded children.

(b) Training of staff in fundamental principles of behavior modification.

(c) Review of literature concerning instructional procedures for retarded children.

(d) Development of procedures for communicating and integrating ideas and procedures across disciplines.

(e) Identification and selection of experimental subjects. This was carried out in the following manner:

Ten Down's Syndrome children in the four to seven year age group, who were living in communities in central Illinois, were selected for participation in this program. They resided for a period of one year in the Herman Adler Zone Center, an Illinois Department of Mental Health facility. A contrast group of ten children living in the communities served by the Adler Zone Center was selected for comparative purposes. The Adler Extra-Mural staff and the project research personnel jointly participated in the identification, selection, and admission of the experimental subjects. The following procedure was used:

(1) Identification. Letters and information forms were sent to 700 physicians in the State of Illinois requesting the names and addresses of children who had been diagnosed as having Down's Syndrome. Letters and forms were also forwarded to day schools and social agencies in the 18 county zone.

(2) Telephone Contacts. When additional information was needed, physicians, schools, or agencies were contacted by telephone.

(3) Preliminary Screening. The research staff reviewed the information which had been obtained and selected children who were from four to seven years of age, had no major health or sensory problems, and were ambulatory. Thirty-two children were identified who met the research criteria for inclusion into the project.

(4) Parental Contacts. The Extra-Mural case coordinators for the Adler Zone Center contacted each family and interviewed the parents to determine if they were interested in having their children participate in the project.

(5) Parental Interviews. Parental response to these inquiries was generally positive. The parents who expressed interest were interviewed by an Adler coordinator and a project research staff member, in order to assess (a) the extent of each parent's interest, (b) the kind of educational program their child was receiving, if any, (c) whether they were willing to participate in a training program for parents, and (d) whether any family problems would interfere with their future participation in the project.

(6) Preliminary Evaluation of the Children. While the parents were being interviewed, a research staff member informally assessed the child through play activities and, when indicated, administered an intelligence test and/or a language test. This contact with the child enabled staff to obtain a more detailed description of the child's level of functioning as well as the specific ways in which he approaches informal and formal learning situations.

(7) Selection of Children. The children within each of the six subzones were ranked with respect to their suitability for the study. Criteria included parental attitudes, the child's need to be placed in an instructional program, health, and sensory problems, sex, age, performance in tasks requiring motor and/or vocal behaviors, and self-help skills. Fifteen children were recommended for admission.

It was desired that the children for the experimental population be accepted from each of the six subzone areas. Ten children were selected at a meeting consisting of the representative of each subzone and the research staff.

In the event a family would have reversed its decision with respect to participation, five of the final fifteen children on the list served as alternates. The ten children who were selected represented a wide range of abilities. This range was intended to give staff members the opportunity to develop a comprehensive curriculum ranging from low level to high level skills. The ten contrast children were then selected from the original list of children in the zone who had been identified as Down's Syndrome Children.

Instructional Activities (January, 1968 - January, 1969)

For the one-year period during which the ten experimental subjects were in residence, each child attended daily instructional classes for training in language, self-help, and motor performance skills. During this time, teaching procedures were developed, tested, modified, retested, and further revised in accordance with their demonstrated effectiveness with the children. Children were instructed in small groups (generally no larger than five children per group), and all teaching took place within the cottage setting.

Post-Instructional Activities (January, 1969 - August, 1969)

After the experimental children were discharged from residence, project staff conducted a review of the various teaching methods which had been employed during the Developmental Stage. The advantages and disadvantages of various instructional procedures to be included in each curriculum were discussed. In many cases specific procedures were modified or eliminated. The Developmental Phase culminated in the writing of an integrated pilot curriculum which included instruction in language, self-help, and motor performance skills.

Implications of the Developmental Phase

The purpose of this project was to develop an integrated curriculum for retarded children. By the conclusion of the Developmental Phase an integrated pilot curriculum for retarded children was developed. It was

not possible, however, to conduct an evaluation of the curriculum while it was in the process of being developed.

Traditionally, curriculum evaluation is conducted by randomly selecting two groups of children from a population and pretesting each group. The experimental group then receives the specified treatment and the control group does not. Following the instructional period, both groups are posttested in order to assess comparative gains.

This procedure is not applicable in a developmental study of this kind because: (a) one does not begin with a clearly defined curriculum; (b) the curriculum must be developed before it is possible to select appropriate assessment devices; (c) both the content and teaching procedures which are being developed are continuously evolving into a terminal product; and (d) it is not logical to compare the progress of the experimental children with that of children in programs that are based on established curricula. These considerations precluded meaningful statistical comparisons between experimental and contrast children as well as valid pretest-posttest comparisons for each of the experimental subjects.

The product of the Developmental Phase was an integrated pilot curriculum for instruction in the areas of language, self-help, and motor performance. The decision was made to field-test part of the program during a third year to determine if teachers who have not been exposed to the program can learn to use it effectively and if retarded children can benefit from the instructional procedures which are employed.

CHAPTER THREE

THE FIELD TESTING PHASE

The Systematic Language Instruction (SLI) curriculum was selected for field testing and evaluation because the basic skills it teaches are prerequisites for work in the self-help and recreation areas. SLI, as is implicit in its title, emphasizes language instruction rather than play and social adjustment. This reflects an optimistic attitude towards the capabilities of retarded children. Only field testing could support or negate this optimism.

Purpose

The field testing phase was concerned with three basic questions:

(1) Can teachers not previously exposed to SLI use the curriculum effectively? If so, under what conditions?

(2) What modifications are indicated in the curriculum?

(3) Can retarded children make demonstrable progress under this program?

Procedure

During the time period from November, 1969 through April, 1970, thirteen classes for "subtrainable" and "trainable" retarded children were involved in the field testing of the Systematic Language Instruction Curriculum. Four classes in Illinois tested the curriculum. Project personnel demonstrated specific teaching procedures and supervised the teachers on a twice-a-week basis. As the teachers demonstrated proficiency in implementing the curriculum and met certain predetermined criteria, the frequency of supervision was reduced, first to once a week and eventually to an on-call basis.

Four classes located in Kentucky also tested the curriculum. Teachers in these classes learned the specific techniques from a manual accompanying the curriculum. Project personnel were available for consultation and scheduled periodic classroom observations approximately twice a month.

One class was located in a private residential learning center for handicapped children in Missouri. Project personnel had conducted a workshop there in the spring of 1969, to demonstrate SLI techniques. During the 1969-1970 academic year, project personnel interacted with the teacher through weekly letters and/or telephones calls and periodic videotapes of language sessions.

Four additional classes, located in Illinois, were included in the evaluation. Teachers of these classes did not use the SLI curriculum. Instead, the classes served as a contrast group to determine what educational gains children make under present systems of instruction. Project personnel made classroom observations in each of these classes twice a month.

Selection of Schools

Several criteria were developed for the selection of schools participating in the field testing program. These included:

(a) The administrative support of appropriate school personnel.

(b) The interest and enthusiasm of the participating teachers.

(c) The teacher's ability to learn new methodology and her flexibility in its implementation.

(d) The inclusion of both public school classes for "trainable" retarded children and private day school programs for "pretrainable" or "subtrainable" children, in order to study the effectiveness of the curriculum with retarded children having a range of abilities.

(e) Chronological ages of the children falling within a range of five to nine years. Any child older than nine years as of October 1, 1970 was excluded from participation in the field testing program.

(f) Normal sensory functioning (e.g., deaf and blind children were excluded from participation in the program).

(g) Proximity of the school to the University of Illinois or the University of Kentucky, to facilitate supervision and minimize travel by project staff.

(h) Presence of a teacher's aid in the classroom was desirable, since the SLI teaching procedures require work with children individually and in small groups.

A description of the classes participating in the Field Testing Phase is presented in Table 1. Both experimental and contrast groups included classes in day schools and private schools. Some teachers had aides and some did not. The experimental teachers used Systematic Language Instruction and the contrast teachers used a variety of teaching methods, including the Peabody Language Development Program and The Illinois Plan for Teachers of Trainable Mentally Handicapped Children, (Circular Series B-2, 1955). The number of subjects in each classroom ranged from three to eleven children. The experimental teachers under supervision in Illinois and in Missouri, maintained a set number of groups and a consistent daily schedule for language instruction. The experimental teachers in Kentucky, who were not supervised, varied extensively in the number of groups and the amount of time spent in daily language instructional activities. The contrast teachers maintained a regular schedule and consistent grouping for language instruction.

Evaluating Teacher Effectiveness

One of the most important reasons for conducting the field testing program was to determine if teachers who had no previous exposure to the pilot curriculum could use it effectively. In order to evaluate teacher effectiveness, it is first necessary to select the variables to be used in observing teacher performance. Next it is necessary to determine that these variables can be measured reliably.

Inter-observer reliability was established by having two observers simultaneously record teacher performance and comparing the results of their observations. Because the consistent use of reinforcement techniques was considered to be one of the most critical and personally demanding facets in implementing the curriculum, the appropriate use of reinforcement techniques was selected as the key variable to be used in measuring teacher performance. In order to evaluate the appropriateness of a teacher's response to children, it is necessary to know both the nature of the teacher's task request and how the child responded to it. For example:

Task Request: "SAM, TOUCH A BALL."

Child's Response: The child touches the ball.

Teacher Response: "GOOD, SAM, YOU TOUCHED A BALL."

In the above sequence, the child made a correct response and the teacher reinforced it appropriately.

TABLE 1

DESCRIPTION OF CLASSES PARTICIPATING IN FIELD TESTING PROGRAM

School	Condition	Public or Private	Presence of Aide	Language Curriculum Used	Average Daily Language Teaching Time Per Group	Number of Subjects	Mean CA (months) as of 10/1/69
I	Illinois Experimental	Private	No	S.L.I.	1 grp x 10 min/grp = 10 min.	3	70
II	"	Public	Yes	S.L.I.	2 grps x 15 min/grp = 30 min.	7	94
III	"	Public	No	S.L.I.	3 grps x 12 min/grp = 36 min.	8	98
IV	"	Private	Yes	S.L.I.	3 grps x 10 min/grp = 30 min.	6	65
V	Kentucky Experimental	Public	Yes	S.L.I.	Variable	9	81
VI	"	Public	Yes	S.L.I.	Variable	11	90
VII	"	Private	Yes	S.L.I.	Variable	6	68
VIII	"	Public	Yes	S.L.I.	Variable	4	78
IX	Illinois Contrast	Public	Yes	(a) Illinois Plan (b) Eclectic Instruction	1 grp x 30 min/grp = 30 min.	9	87
X	"	Private	Yes	Peabody Language Development Kit	1 grp x 30 min/grp = 30 min.	5	78
XI	"	Public	Yes	(a) Peabody Language Development Kit (b) Eclectic Instruction	1 grp x 30 min/grp = 30 min.	7	79
XII	"	Public	No	Eclectic Instruction	1 grp x 30 min/grp = 30 min.	9	94
XIII	Missouri Experimental	Private Residential	No	S.L.I.	2 grp x 20 min/grp = 40 min.	8	100

Table 2 presents the observational categories used in describing the task request, child response, teacher response sequence and the means by which inter-observer reliability was determined. The coefficient of reliability was calculated as follows:

$$\text{Inter-Observer Reliability} = \frac{\text{Number of Cells in Agreement}}{\text{Total Number of Cells}}$$

The example in Table 2 shows that the reliability between observers one and two was 75%. An "X" is placed in a cell when observer 1 and 2 did not agree.

Reliability was first calculated during a twelve-minute observation in November, 1969 at 83.3%. Reliability on an equivalent twelve-minute observation period reached 93% by February, 1970.

A trained data collector recorded these behaviors during SLI instruction in each Illinois experimental classroom on a three times a week basis. One observer recorded in schools I and II and the other in schools III and IV. Due to financial considerations it was possible to collect these data only in the Illinois Experimental classes. During each observed session, all the children in a class were observed at least once. Each child was observed for a two minute period. When all children had been observed, the rotation was started again.

Criteria were established to define teacher effectiveness. These included:

(a) Teacher reinforces less than 2% of the child's responses on the pretest and posttest. According to the specified teaching procedure, no response during the pretest or posttest should be reinforced.

(b) Teacher reinforces more than 90% of the child's correct responses to her task requests. The curriculum specifies that each time the child responds correctly to a task request, he should be reinforced immediately.

(c) Teacher reinforces less than 2% of the child's incorrect responses to her task requests. The specified procedure requires that the teacher not reinforce the child when he makes an error or does not respond to a task request.

TABLE 2
DETERMINATION OF INTER-OBSERVER RELIABILITY

Episodes

	1	2	3	4
Task Request	V	V	V	M
Child Response	C	I	C	C
Teacher Response	R	T/O	R	R

Observer # One

Episodes

	1	2	3	4
Task Request	V	V	M	M
Child Response	C	I	C	C
Teacher Response	N	N	R	R

Observer # Two

The code used for observation is as follows:

Task Requests

V: Task Request requiring vocal response (e.g., "SAM, IS THIS A BALL?").

M: Task Request requiring motor response (e.g., "SAM, TOUCH A BLOCK.").

V: Task Request requiring a vocal response (presented during correction procedure).

M: Task Request requiring a motor response (presented during correction procedure).

Child Response

C: Correct answer along appropriate vocal-motor dimension.

I: Incorrect answer along appropriate vocal-motor dimension.

-: Incorrect answer along inappropriate vocal-motor dimension.

O: No response.

Teacher Response

R: Reinforcer (praise, tangible, or primary).

N: Negative comment ("No," "wrong," "don't do that," etc.).

T/O: Time-out (teacher puts her head down or prematurely terminates child's turn).

Initially, extensive supervision was provided and data collected in each Illinois Experimental classroom to insure that teachers would successfully implement the curriculum. The goal, however, was to fade out the visits of project personnel as soon as a teacher could effectively and independently use the curriculum.

When a teacher met all of the criteria for three successive observations, the frequency of the supervisor's visits to the classroom was reduced. If these visits and the data collector's observations indicated continued high performance, the supervisor then became available solely on an on-call basis. She was then consulted only when specific problems arose.

Similarly, the data collectors initially observed three times a week. Once the teachers met the above criteria, the data collectors visited only once a week. They provided a communications link between teachers and project personnel. The data collectors could answer some questions and refer the teacher to the supervisor for more involved problems.

Modifying the Curriculum

Teachers using SLI were asked to record which children passed and which failed each stage of each lesson plan. A high frequency of errors indicated programming inadequacies. Project personnel used this information together with personal observations and discussions with teachers to discover problem areas in the program content and in instructional procedures. This process resulted in many modifications in the SLI curriculum.

Upon completion of the instructional program, those teachers who participated in field testing the experimental language program were contacted in detail concerning (a) their perceptions of and reactions to the field testing experience, (b) their critical assessment of the strengths and weaknesses of the various components of the curriculum, (c) their training in its implementation, and (d) their specific suggestions for curriculum revision and future training activities. The teachers made a number of valuable suggestions, many of which have subsequently been incorporated into the curriculum. The interview format used in Illinois and Missouri is reproduced in the Appendix.

Evaluating Children's Progress

A. Concepts learned

The most meaningful measure of the progress of the children receiving Systematic Language Instruction is the number of concepts

learned during the instructional period. In terms of SLI procedures, a child has "learned a concept" when and only when he

(1) fails the pretest for that concept,

(2) is taught the lesson for that concept, and

(3) passes the posttest for that concept.

The teachers in the experimental classrooms in Illinois, Kentucky, and Missouri were instructed and encouraged to keep accurate records of the concepts learned as an essential aspect of the SLI procedures. Table 3 presents a sample record sheet form that the teachers were asked to use in recording the child's passes and failures with respect to the designated criteria on pretests, posttests, and during each stage of instruction for each concept taught. For example, for the concept "ball," Mary passed the pretest and was not taught the lesson. Suzie, Mike and Jim failed the pretest and learned the concept, Bob failed the pretest and then passed the lesson through stage six, but he has not yet passed the posttest.

B. Gain Scores on Test Battery

A battery of tests was administered by trained project personnel to each child in each of the thirteen participating classes on an individual basis. The tests were administered in October, 1969 prior to the language instructional program and in April and May, 1970, after the termination of language instruction. These measures included:

(1) A sample of language concepts included in the SLI curriculum

(2) The Peabody Picture Vocabulary Test, Form B

(3) The Parsons Language Sample

Table 4 outlines the procedures used to test and collect data during the field testing phase. It describes chronologically the type of data collected, which classes were involved, and who gathered the data.

The testing battery administered in October, 1969 provided a pre-treatment description of the sample population. Table 5 presents means and standard deviations on all measures for each of the thirteen schools, for each of the four conditions and for the overall group. Thus, a general impression can be gathered of the level of the children participating in the field testing phase.

TABLE 3
SAMPLE CHILDREN'S RECORD SHEET

Lesson Plan	Date	Stage	Mary	Bob	Susie	Mike	Jim		
Ball	11-15	1-Pretest	- ~~+++~~ P	+ - F	+ - F	- + - F	- - F		
	"	3		P	P	F	P		
	"	3				P			
	"	3				P			
	11-16	4		F - ADS	P	P	F		
		4		P			P		
	11-17	5		F - ADS	P	P	P		
		6		P	P	P	P		
		7-Posttest		+ - F	~~+++~~ P	~~+++~~ P	~~+++~~ P		

30

TABLE 4
OUTLINE OF DATA-COLLECTION PROCEDURES USED DURING FIELD TESTING PHASE

Type of Data	Which Classes Were Involved?	When Was It Collected?	Who Collected It?
Pre-Instruction Test Battery Sample of SLI concepts Peabody Picture Vocabulary Test, Form B Parsons Language Sample	Illinois Experimental Kentucky Experimental Missouri Experimental Illinois Contrast	October, 1969	Trained project personnel
Teacher Effectiveness Percent of children's responses reinforced during pretest and posttests • Percent of correct responses reinforced during instruction Percent of incorrect responses during instruction o	Illinois Experimental	November, 1969 - April, 1970	Data collectors
Concepts Learned Stage Data (Number of S's passing and failing each stage in lesson plan) Concepts learned (Number of S's who failed pretest, were taught lesson plan, and passed posttest)	Illinois Experimental Kentucky Experimental Missouri Experimental	November, 1969 - April, 1970	Teachers
Post-Instruction Test Battery (See pre-instruction test battery)	Illinois Experimental Kentucky Experimental Missouri Experimental Illinois Contrast	April - May, 1970	Trained project personnel

TABLE 5
PRE-INSTRUCTION TEST BATTERY SCORES - BY SCHOOLS AND CONDITIONS

School #	Condition	SLI Sample $\bar{X}$	SLI Sample S.D.	Peabody MA $\bar{X}$	Peabody MA S.D.	Parsons $\bar{X}$	Parsons S.D.
I	Illinois Experimental	81.67	27.74	24.66	3.21	26.66	0.58
II	"	88.28	24.91	31.86	5.61	38.28	7.78
III	"	93.75	48.08	35.25	9.25	40.75	17.81
IV	"	54.50	36.30	27.16	5.46	15.83	10.44
V	Kentucky Experimental	32.33	39.27	23.00	5.15	15.22	15.08
VI	"	68.55	34.45	30.45	6.35	31.55	13.62
VII	"	42.66	55.90	27.83	10.74	22.33	17.87
VIII	"	65.50	48.56	26.00	4.55	28.25	15.59
IX	Illinois Contrast	110.44	34.96	36.44	11.81	47.44	18.76
X	"	89.28	47.00	31.60	8.29	36.00	16.87
XI	"	87.78	34.74	30.44	9.84	37.00	12.40
XII	"	111.00	35.93	32.86	8.21	42.28	16.03
XIII	Missouri Experimental	98.51	34.34	38.14	8.80	37.71	11.41
	Illinois Experimental	80.83	38.49	30.92	7.56	32.04	15.71
	Kentucky Experimental	52.10	43.40	27.10	7.28	24.37	15.98
	Illinois Contrast	100.23	37.04	33.00	9.73	41.20	15.95
	Missouri Experimental	98.51	34.34	38.14	8.80	37.71	11.41
Totals		79.12	43.90	30.90	8.82	32.97	16.89

Results

Can Teachers Not Previously Exposed to Systematic Language Instruction (SLI) Use the Curriculum Effectively?

Data were gathered in order to indicate whether teachers could successfully employ the procedures specified in the curriculum. To obtain this information, data collectors observed SLI implementation in the four Illinois Experimental classrooms on a regular basis. The focus was on the teacher's use of reinforcement procedures (a) during pretesting and posttesting, (b) after the child's correct responses during instruction, and (c) after incorrect responses during instruction.

Figure 1 illustrates the percentage of the children's responses which were reinforced by the four Illinois Experimental teachers during pretest and posttest situations. Data were recorded on twelve occasions throughout the school year. These data were collected in a given classroom when the teacher was pretesting or posttesting and the data collector was present. From Figure 1, it is apparent that at the outset some of the teachers were inappropriately reinforcing children during the testing situation. By the fourth observation, (after a month of supervision), however, all teachers had met the criterion of reinforcing less than 2% of the child's responses during testing. This level of performance in pretest and posttest situations was maintained throughout the remainder of the instructional period.

During the task request stages of each lesson plan, the teacher is required to reinforce each correct response. As Figure 2 indicates, two of the four Illinois Experimental teachers met the established criterion at the first observation (third week of teaching). This criterion was maintained throughout the project. The other two teachers did not meet criterion until the sixteenth observation (nineteenth week). Even with supervision, two teachers experienced some difficulty in learning to reinforce at a consistently high rate. Nevertheless, all four Illinois Experimental teachers were able to meet and maintain the criterion for reinforcing correct responses during instruction.

Figure 3 presents the percent of incorrect responses during instruction which were reinforced by the teachers. By the sixth observation (fifth week), all of the teachers were able to reduce the percentage of reinforcement of incorrect responses to below 2%. These data indicate that with appropriate supervision teachers can learn not to reinforce incorrect responses during instruction.

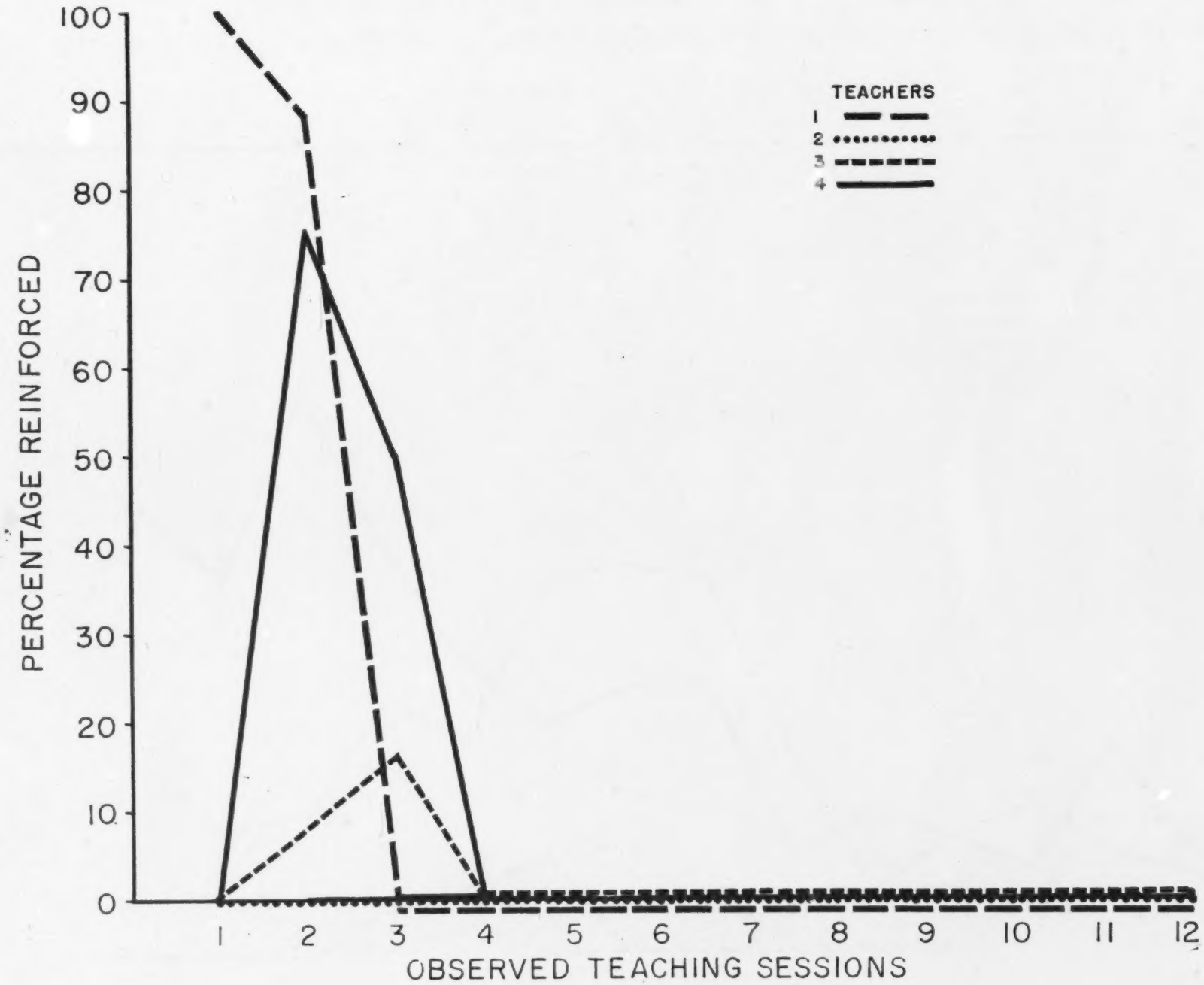


Figure 1. PERCENTAGE OF RESPONSES REINFORCED DURING PRETESTS AND POSTTESTS: ILLINOIS EXPERIMENTAL TEACHERS.

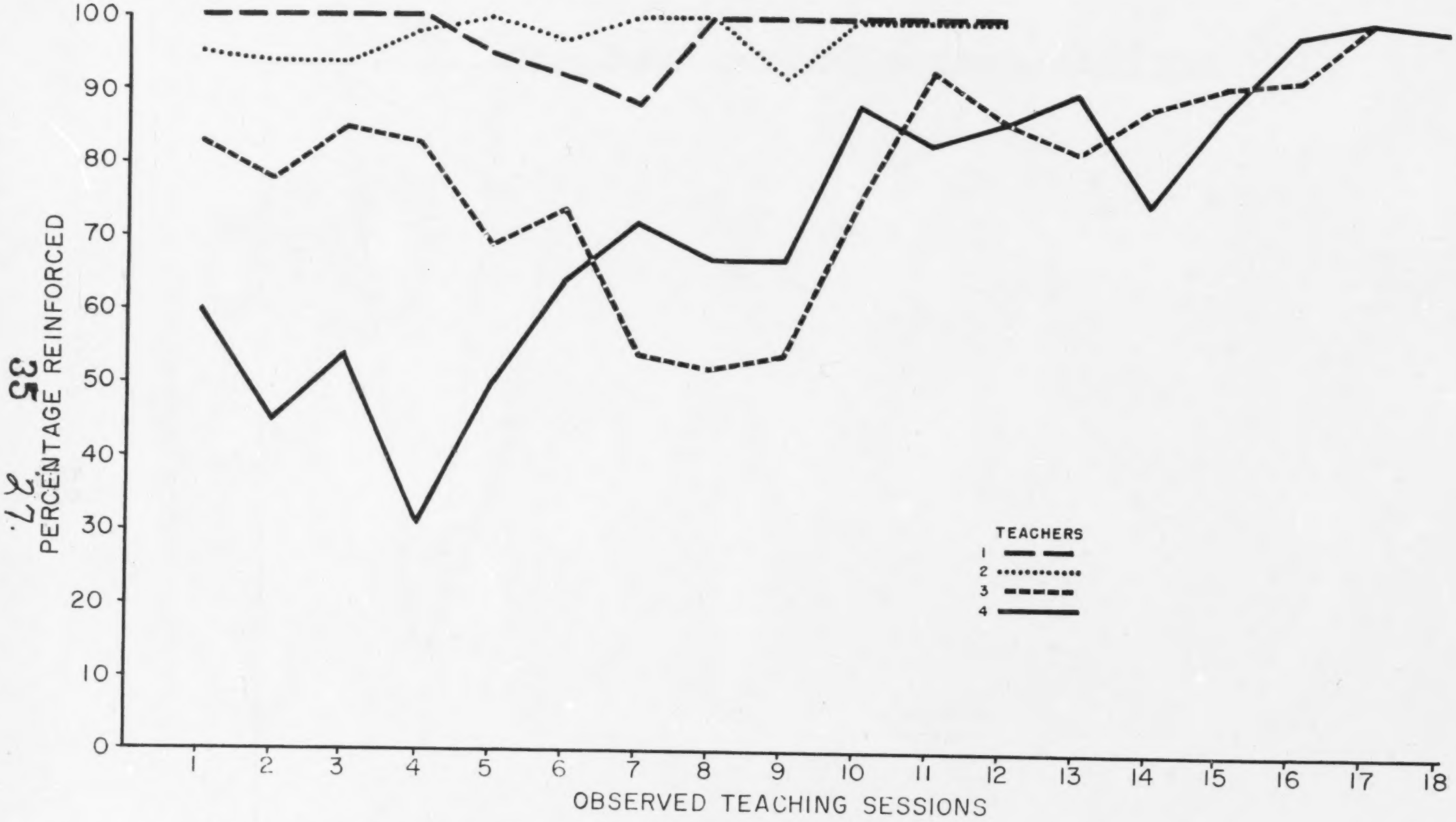


Figure 2. PERCENTAGE OF CORRECT RESPONSES REINFORCED DURING INSTRUCTION : ILLINOIS EXPERIMENTAL TEACHERS.

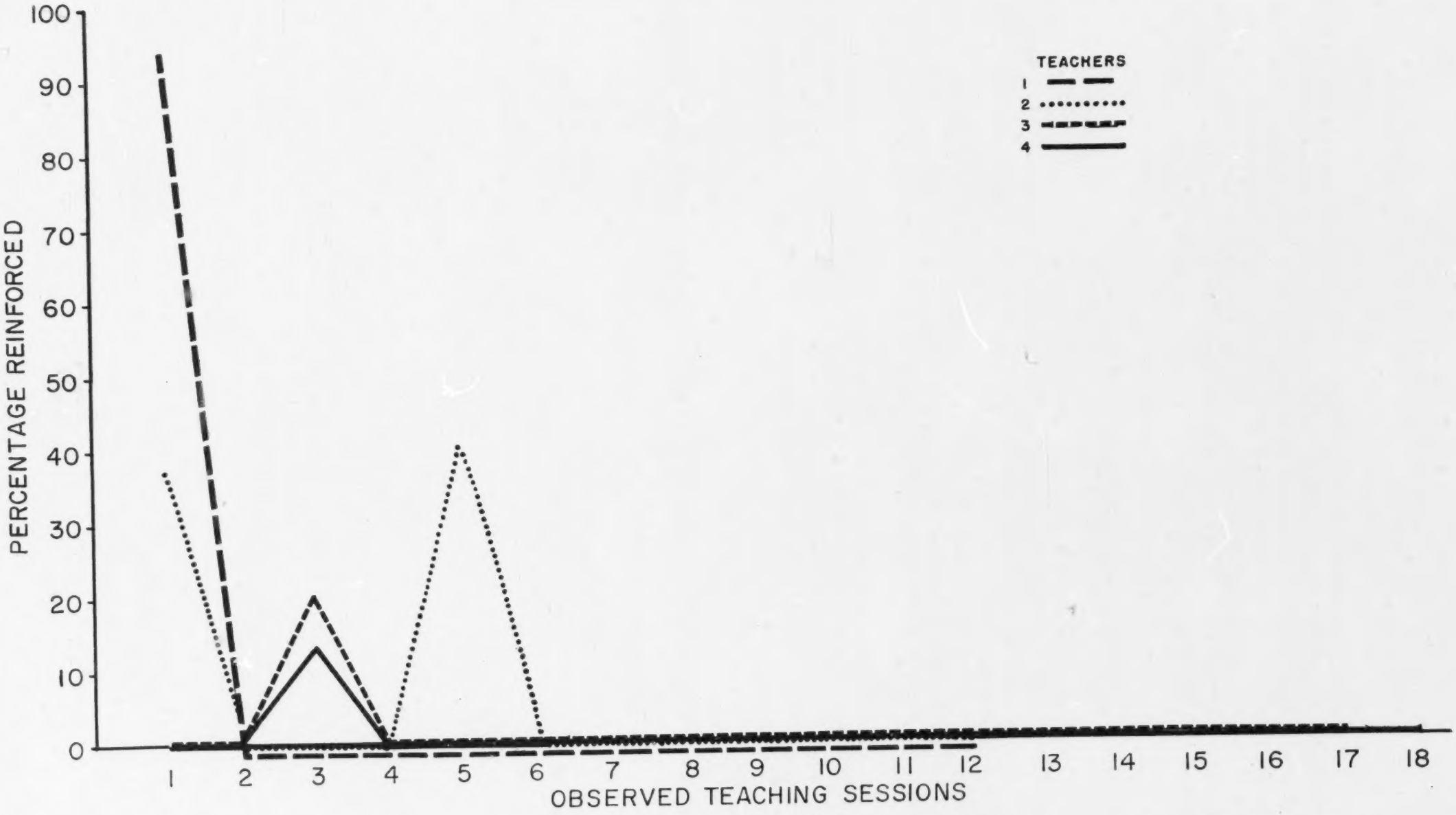


Figure 3. PERCENTAGE OF INCORRECT RESPONSES REINFORCED DURING INSTRUCTION: ILLINOIS EXPERIMENTAL TEACHERS.

In summary, these data indicate that, with supervision, the four Illinois Experimental teachers were able to learn when and how to use the reinforcement procedures specified in the curriculum. The inadvertent reinforcement of children during pretests and posttests was easily reduced as was the inadvertent reinforcement of incorrect responses during instruction. Learning to reinforce 90% or more of all correct responses during instruction seemed to be the most difficult task for the teacher.

What Modifications Are Indicated in the Curriculum?

A number of revisions were made in procedures and content as a result of the field testing experience. Discussion of specific problems encountered in the classroom provided one basis for modification. Second, the lesson plan data were analyzed. If 25% of the children failed a given stage, that stage was closely examined. Third, interviews with the experimental teachers in Illinois and Missouri led to further modifications. A questionnaire was used to obtain reactions from the teachers in Kentucky.

This feedback resulted in extensive rewriting of some sections of the curriculum, deletion of some lesson plans from the curriculum, major changes in others, and many new suggestions for training teachers to use SLI in the future. The field testing phase provided invaluable experience for modifying the Language Curriculum.

Can Retarded Children Make Demonstrable Progress Under This Program?

A. Concepts learned

The 31 children for whom concept data are available (Illinois Experimental and Missouri Experimental classes) learned a total of 590 concepts, an average of 19.0 concepts per child. Children in the four Illinois Experimental classes learned an average of 11, 15.3, 14.1, and 32.7 concepts respectively. The Missouri subjects each learned an average of 21.3 concepts.

Much of the variance in these figures can be attributed to the types of concepts taught in the different classes. Figure 4 illustrates the number of concepts the subjects learned by parts of speech. Figures 5 - 10 present concepts learned under each of the various lesson plans in the curriculum. Teacher IV, whose pupils learned the greatest number of concepts, stressed nouns (objects). Those teachers whose children acquired fewer concepts tended to use longer and more involved lesson plans such as prepositions.

Legend for Figures 4, 6 - 10

1. PREREQUISITE BEHAVIORS: "GOOD ATTENDING"
2. PREREQUISITE BEHAVIORS: ATTENDING TO OWN NAME
3. PREREQUISITE BEHAVIORS: TOUCH
4. YES-NO RESPONSE: INDICATIVE
5. YES-NO RESPONSE: CONFIRMATIVE
6. OBJECT DISCRIMINATION: Ball (for objects available in groups of four)
   OBJECT DISCRIMINATION: Door (for objects not available in groups of four)
7. OBJECTS: BODY PARTS - Nose
8. QUESTION FORMS: Who
9. QUESTION FORMS: What
10. ACTIONS: INTRANSITIVE VERBS - Jump
11. ACTIONS: TRANSITIVE VERBS - Open
12. ADJECTIVES: Big
13. ADJECTIVES: Wet
14. ADJECTIVES: Loud and Quiet
15. ADJECTIVES: Right (hand)
16. ADJECTIVES: Same
17. PREPOSITIONS: (Put) in
18. POSSESSIVE PRONOUNS: EXPRESSIVE USE - My
19. POSSESSIVE PRONOUNS: His
20. OBJECTIVE PRONOUNS: Her
21. SUBJECTIVE PRONOUNS: He
22. SUBJECTIVE PRONOUNS: EXPRESSIVE USE - I
23. PLURALS
24. ADVERBS: Up and Down
25. ADVERBS: Fast
26. MULTIPLE COMMANDS: THE USE OF "AND"
27. ESTABLISHMENT OF A CHAIN OF ACTIONS UNDER A SINGLE VOCAL COMMAND:
    Set the Table

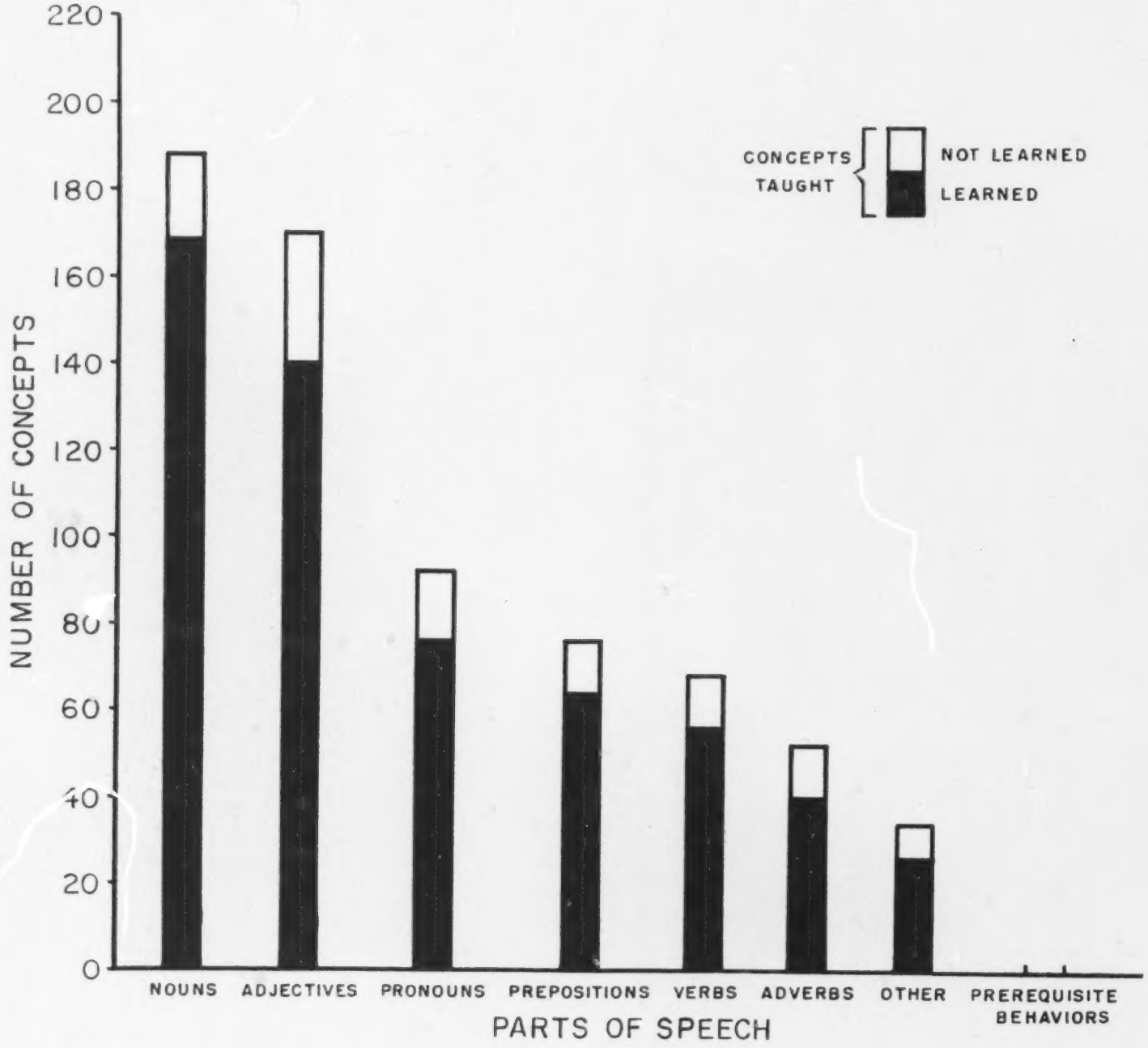


Figure 4. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY PARTS OF SPEECH:

ILLINOIS EXPERIMENTAL AND MISSOURI EXPERIMENTAL CLASSES (N=31)

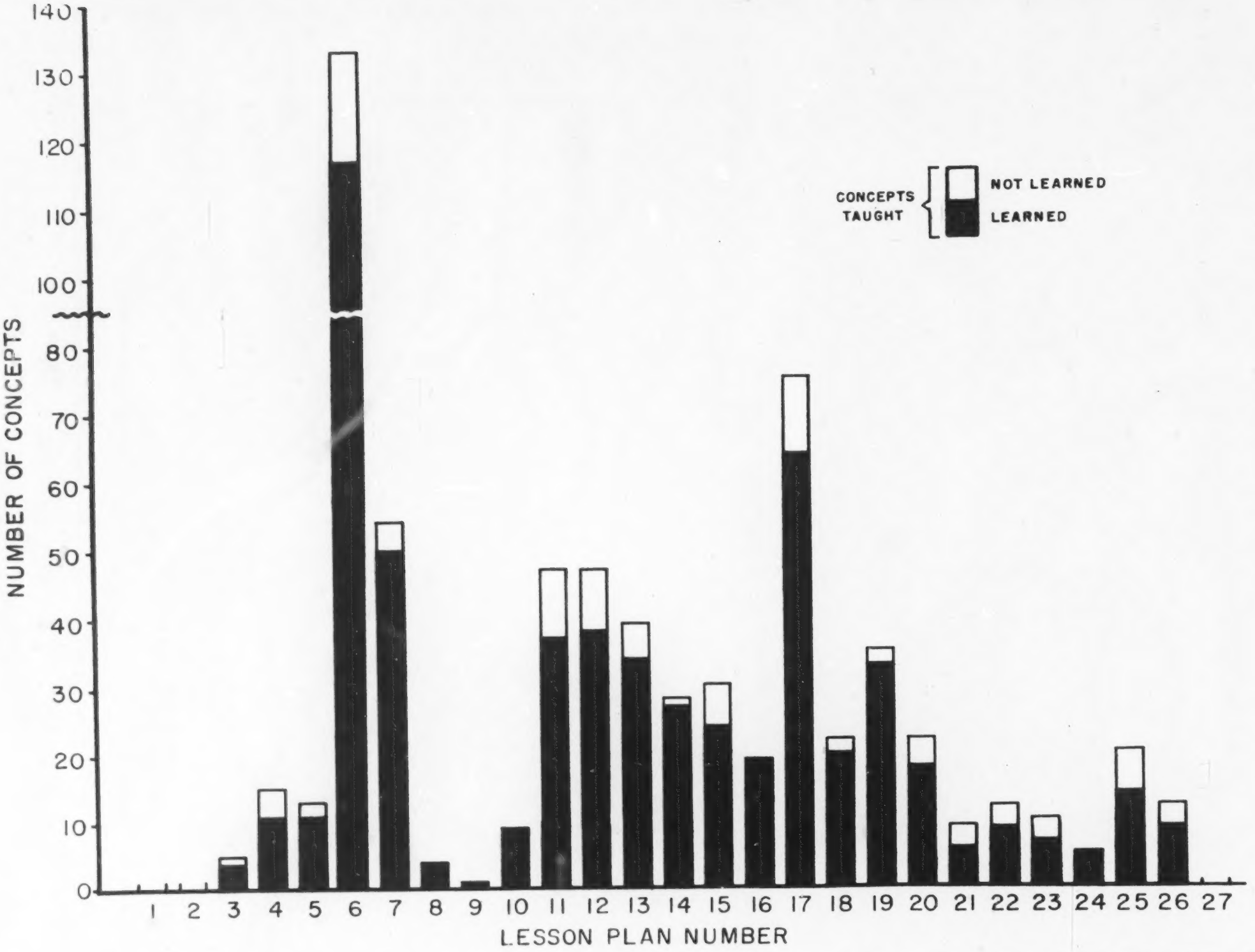


Figure 5. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS: ILLINOIS EXPERIMENTAL AND MISSOURI EXPERIMENTAL CLASSES (N = 31)

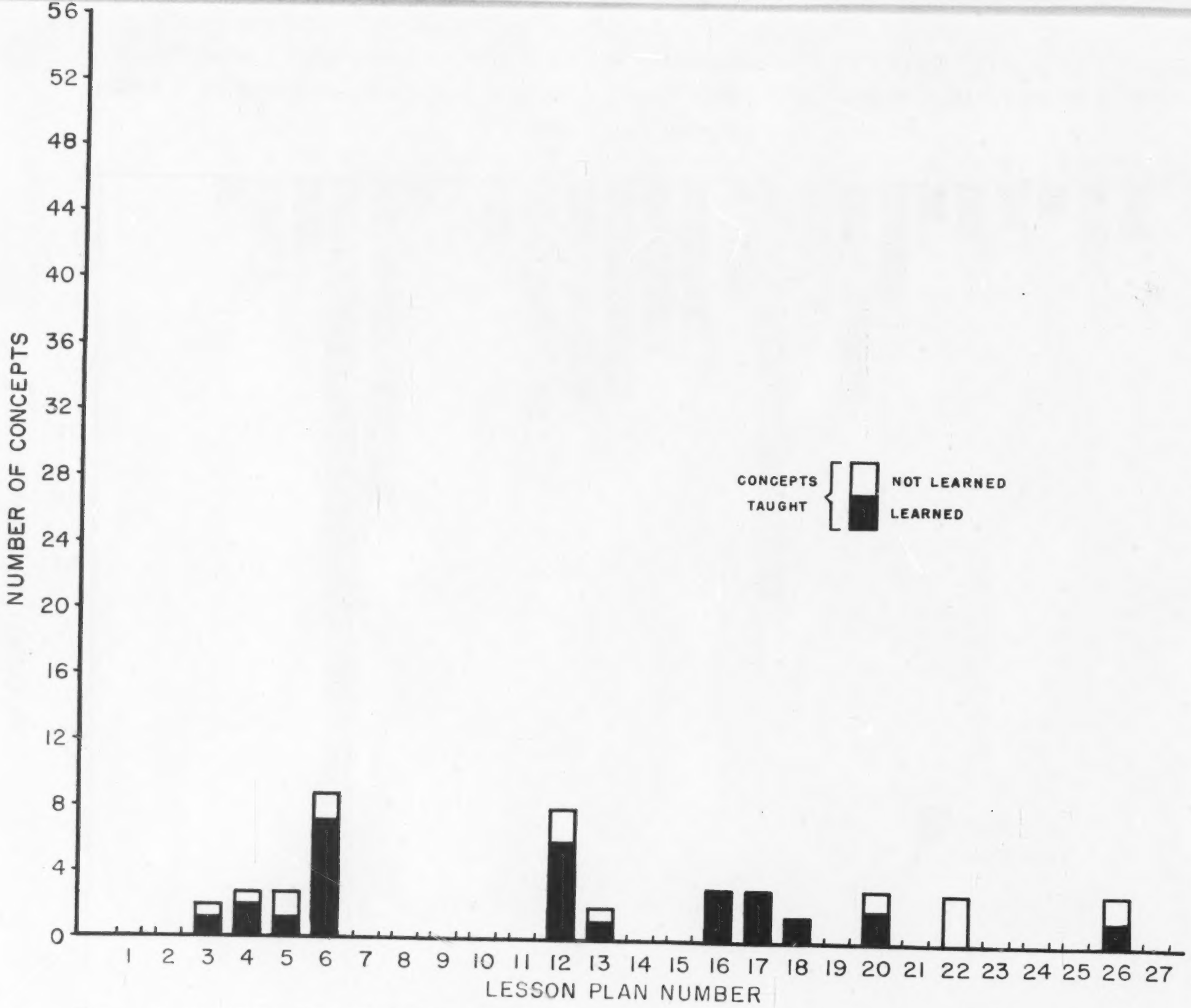


Figure 6. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS: CLASS I (N=3)

33.

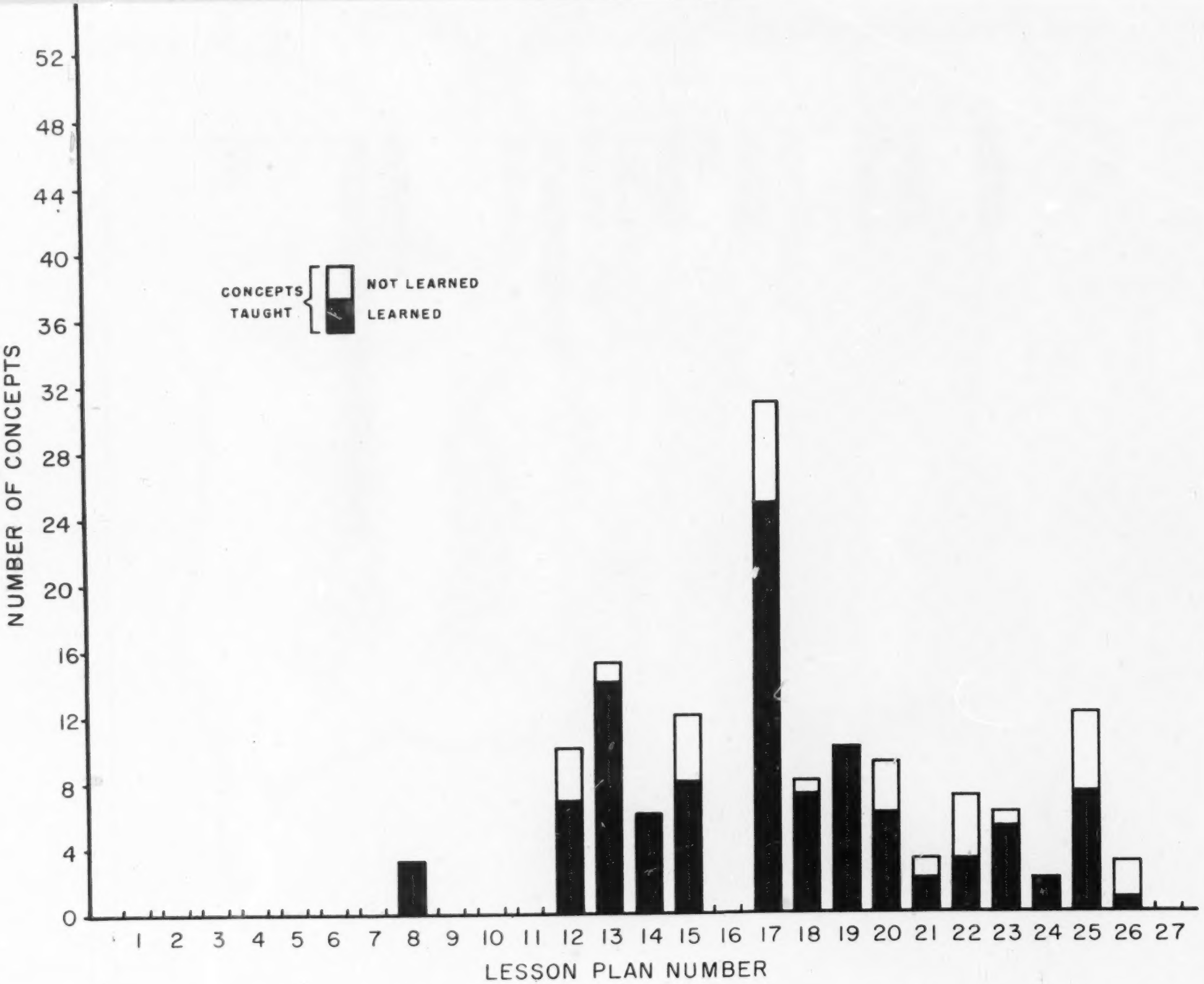


Figure 7. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS: CLASS II (N=7)

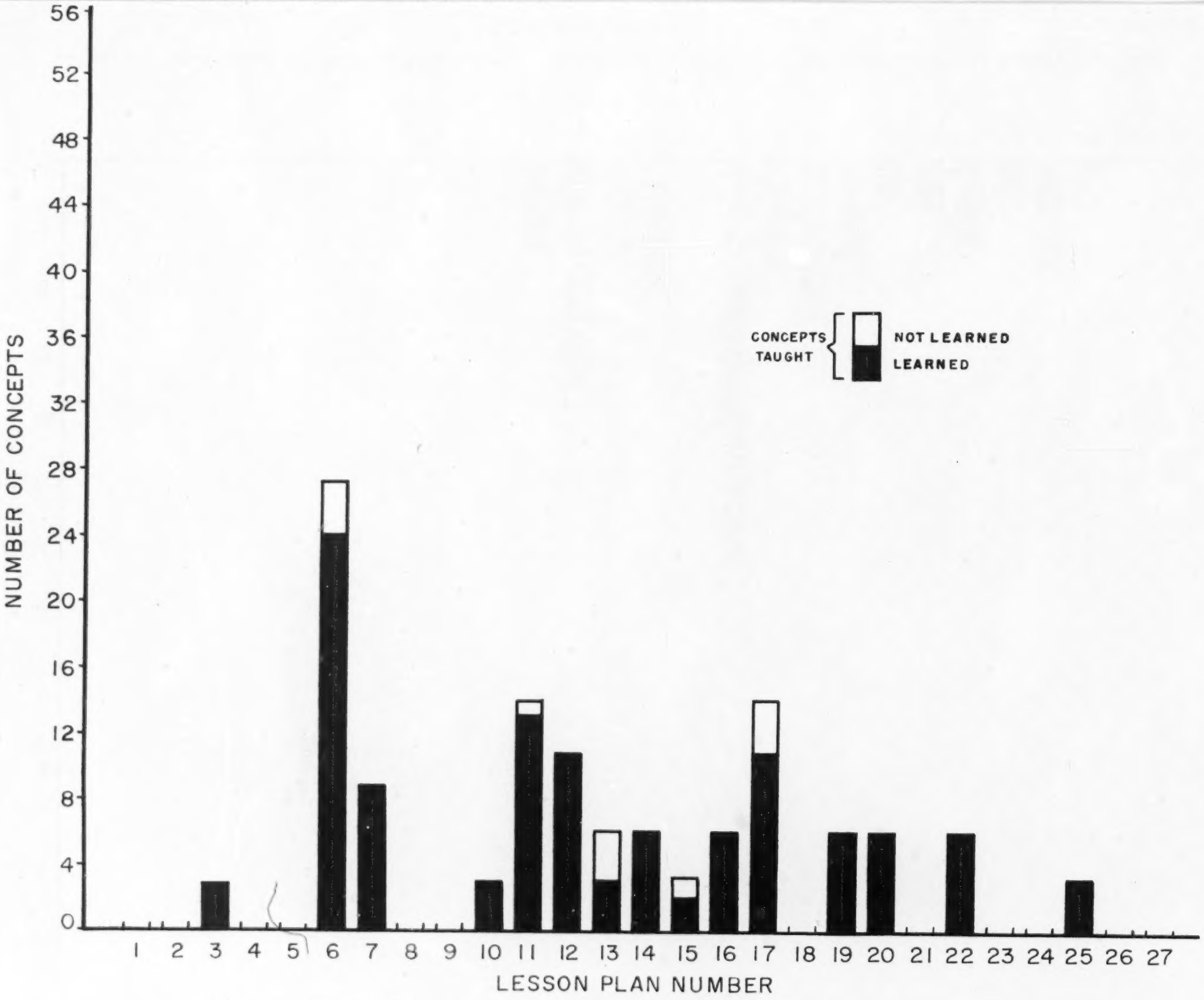


Figure 8. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS: CLASS III (N=8)

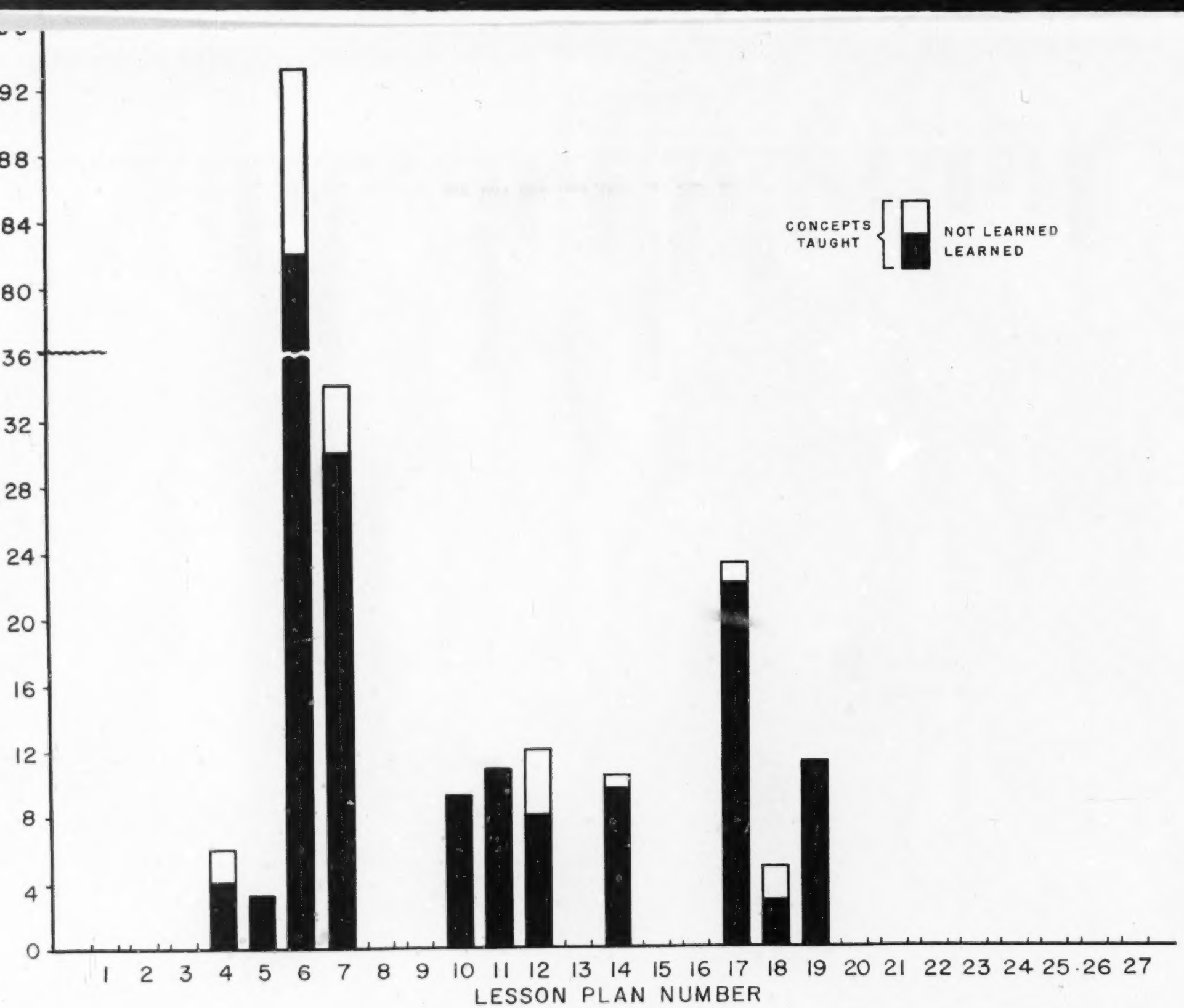


Figure 9. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS: CLASS IV (N=6)

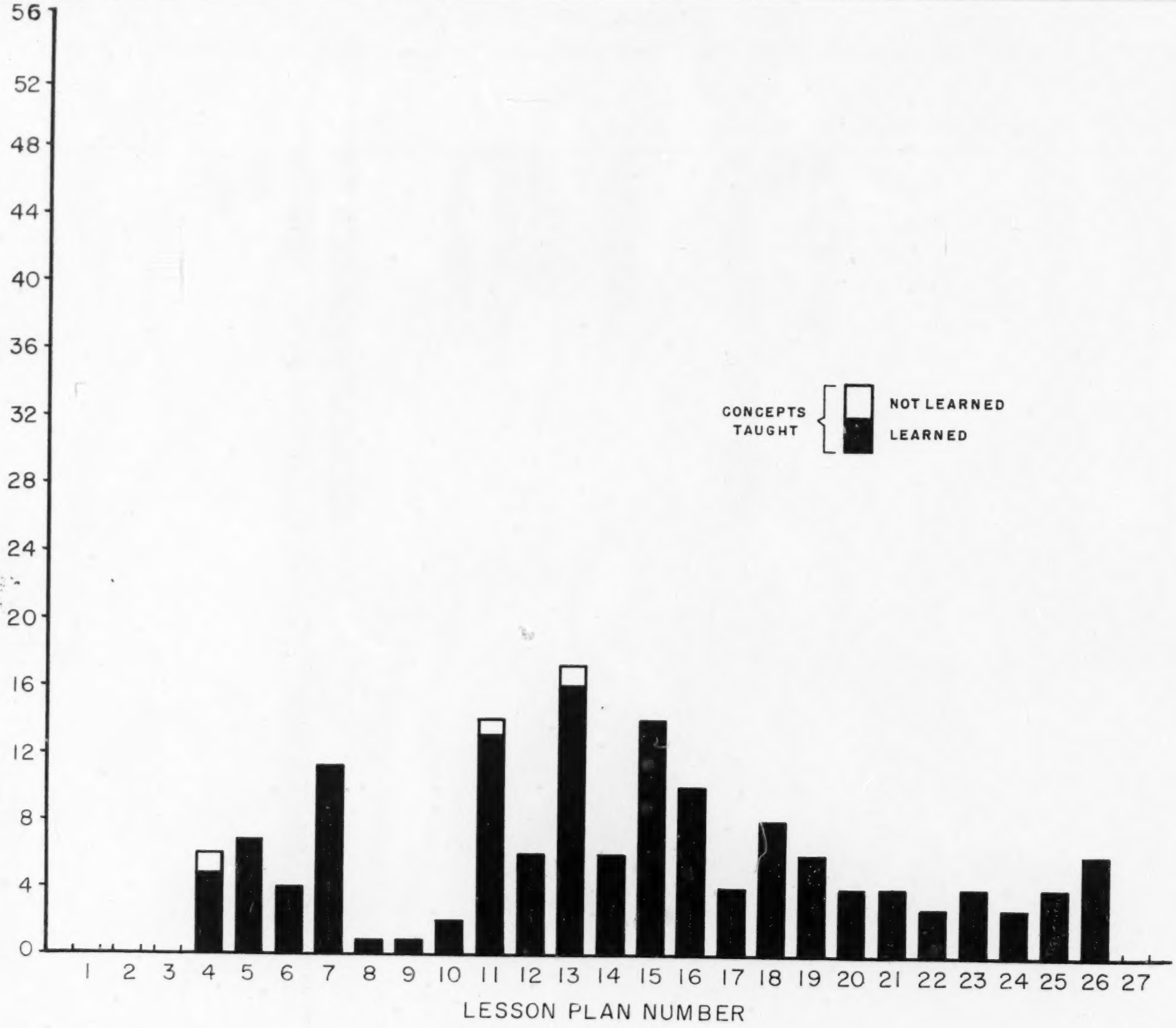


Figure 10. NUMBER OF CONCEPTS TAUGHT, LEARNED, AND NOT LEARNED BY LESSON PLANS:

As Figures 4 - 10 indicate, nouns (Lesson Plans 6 and 7), adjectives (Lesson Plans 12 - 16) and prepositions (Lesson Plan 17) were most frequently taught, while action verbs (Lesson Plans 10 and 11) were seldom taught, and prerequisite behaviors (Lesson Plans 1 - 3) were not taught at all. Some teachers concentrated on one or two lessons (e.g., Teacher IV) while others taught concepts from virtually all SLI areas (e.g., Teacher XIII.)

Figures 4 - 10 illustrate that the children learned 86.7% of all concepts taught. A high percentage of concepts taught were learned regardless of the lesson plan used.

B. Gain Scores (November, 1969 - April, 1970)

Gain scores provide another indication of the children's learning. These gains were computed for the SLI sample, the Peabody Picture Vocabulary Test, and the Parsons Language Sample. Figures 11 - 13 present subject-by-subject gain scores by test and by condition. An inspection of these figures indicates that there was a great amount of variability in gain scores within each condition. Also, there were several "negative" gain scores and some very large gain scores within each conditon. The distributions of gain scores reflect the range of behaviors within the "trainable" and "subtrainable" populations, the difficulty in measuring the performance of these children, and the unreliability of the measures. Nevertheless, it is apparent that most children had moderate gains and that the Illinois Experimental children systematically made the greatest gains on the SLI sample.

Tables 6 - 8 present Pre-instruction, Post-instruction, and Gain Scores by school and condition.

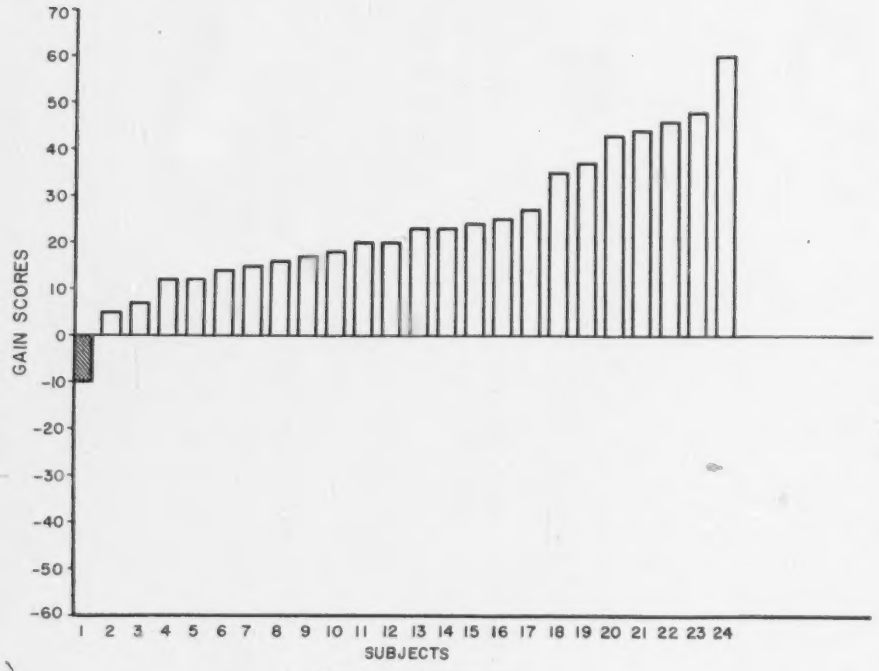
1. SLI Sample

An analysis of variance on the SLI pre-instruction scores indicates that there were significant differences across the four conditions ($F = 8.65$, 2 and 9 d.f., $p < .01$). The children in the Illinois Contrast and Missouri Experimental Schools had significantly higher pre-instruction SLI scores than the Kentucky Experimental subjects (see Table 5). The gain scores on the SLI sample must be interpreted in light of these initial differences across conditions.

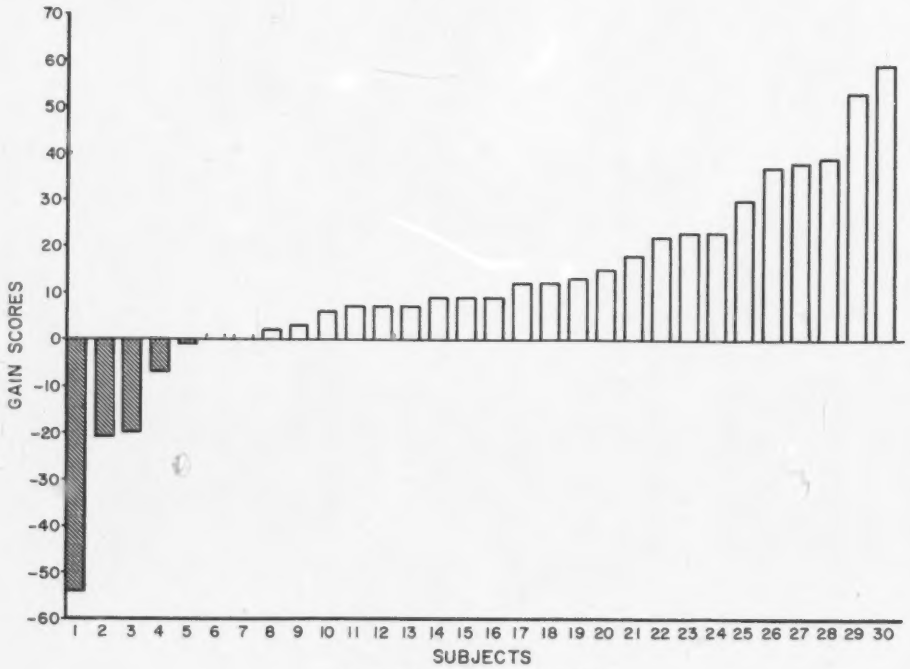
A t-test revealed that the Illinois Experimental subjects earned significantly greater gain scores than did those in the Illinois Contrast Condition ($t = 4.3$, 5 d.f., $p < .005$). The

FIGURE II.

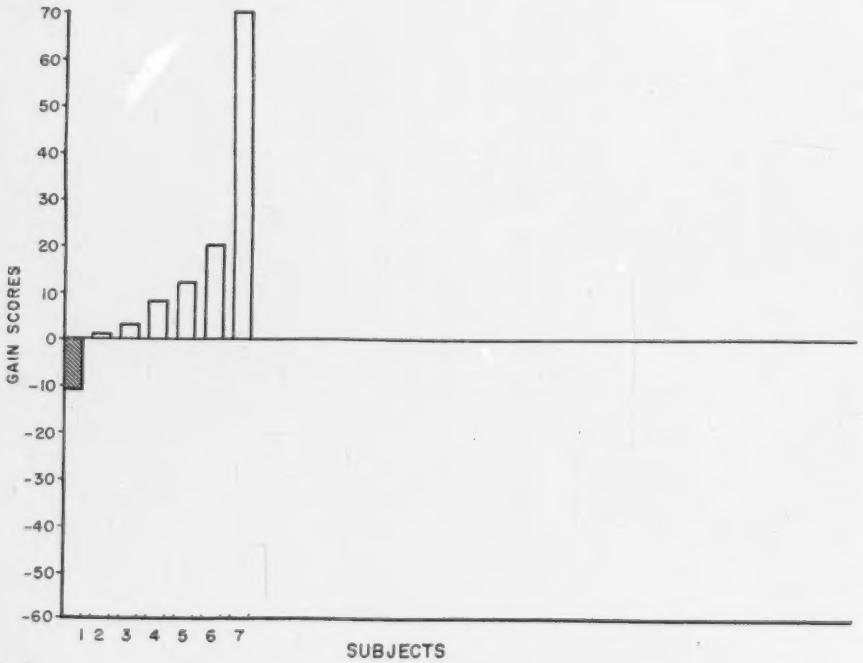
SUBJECT BY SUBJECT GAIN SCORES:
SYSTEMATIC LANGUAGE INSTRUCTION CONCEPT SAMPLE



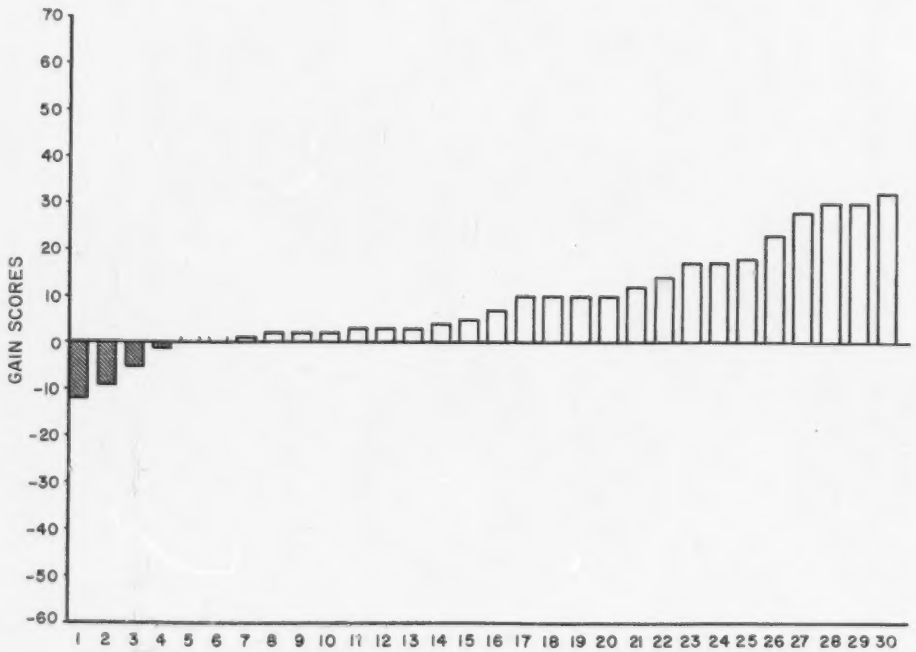
ILLINOIS EXPERIMENTAL



KENTUCKY EXPERIMENTAL



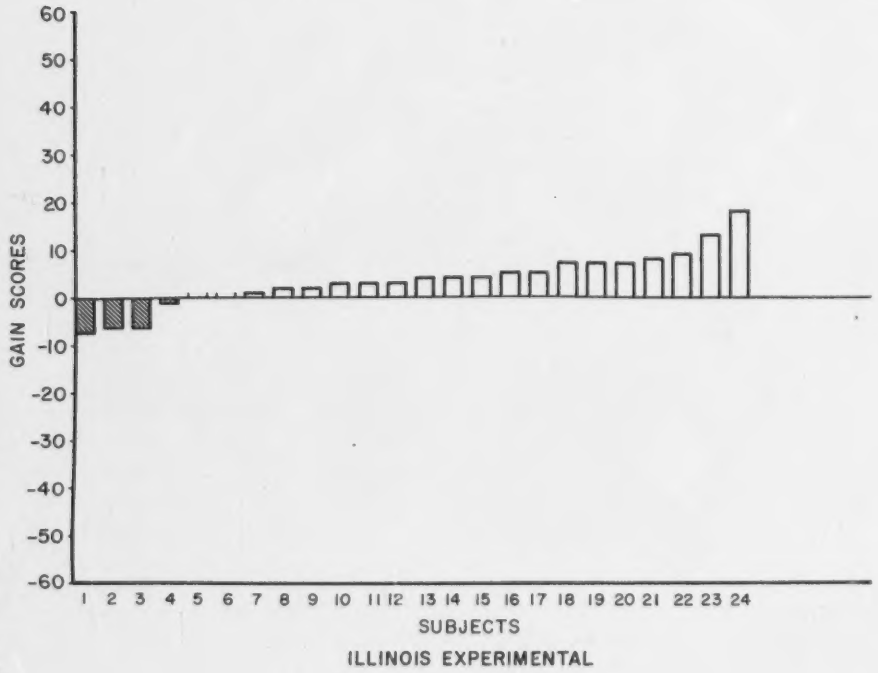
MISSOURI EXPERIMENTAL



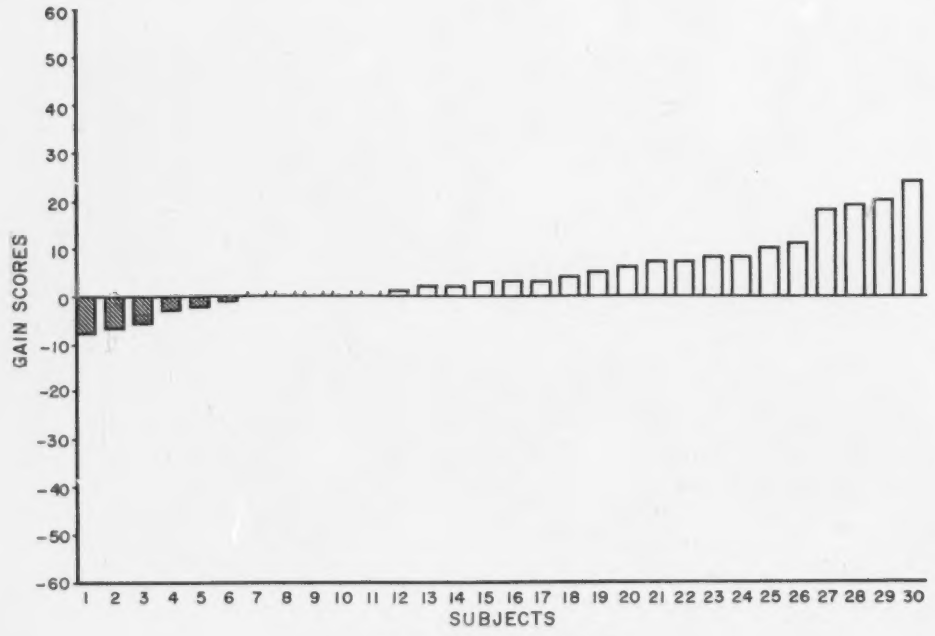
ILLINOIS CONTRAST

FIGURE 12.

SUBJECT BY SUBJECT MENTAL AGE GAIN SCORES:
PEABODY PICTURE VOCABULARY TEST



ILLINOIS EXPERIMENTAL



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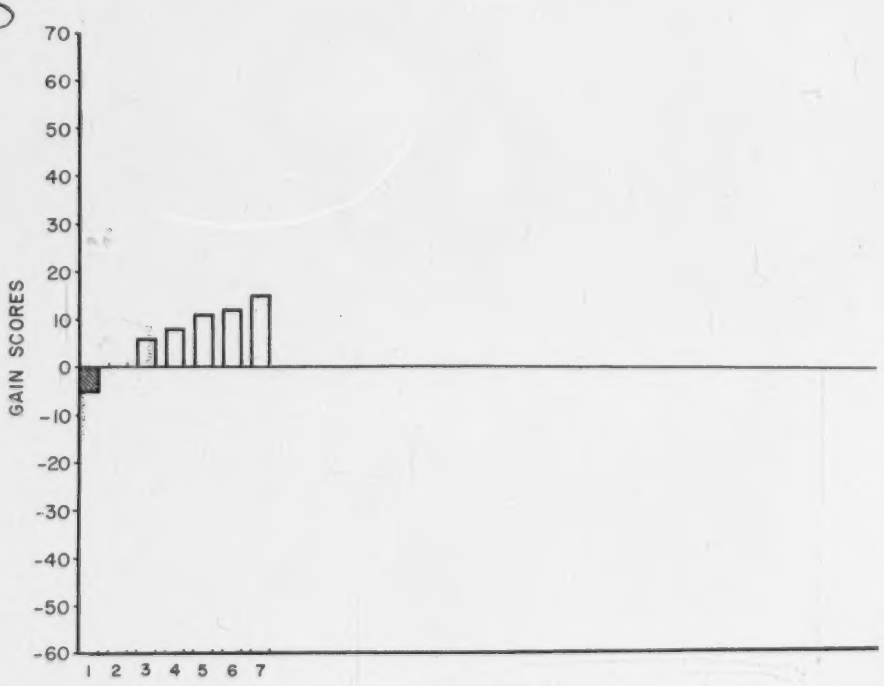

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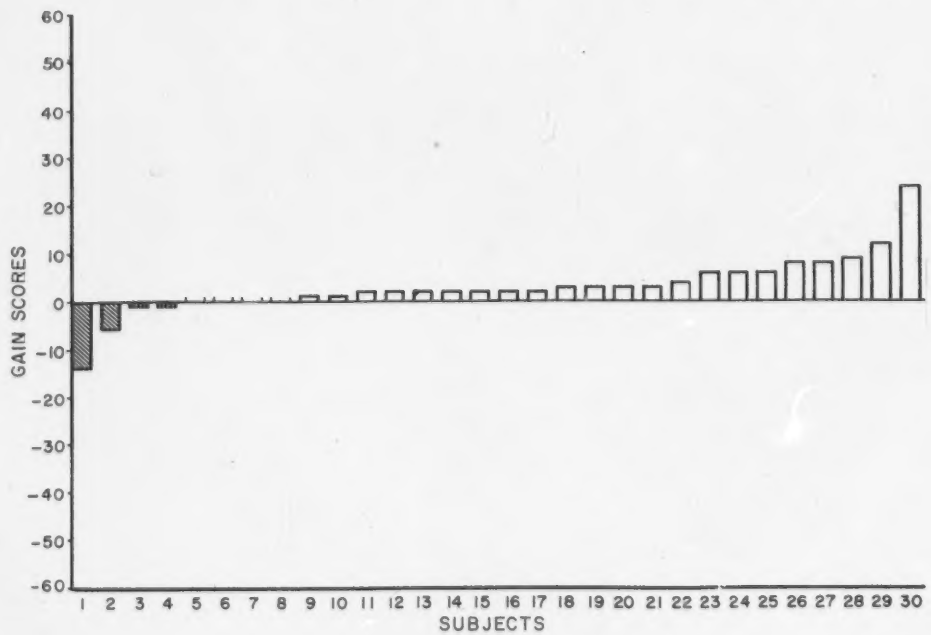
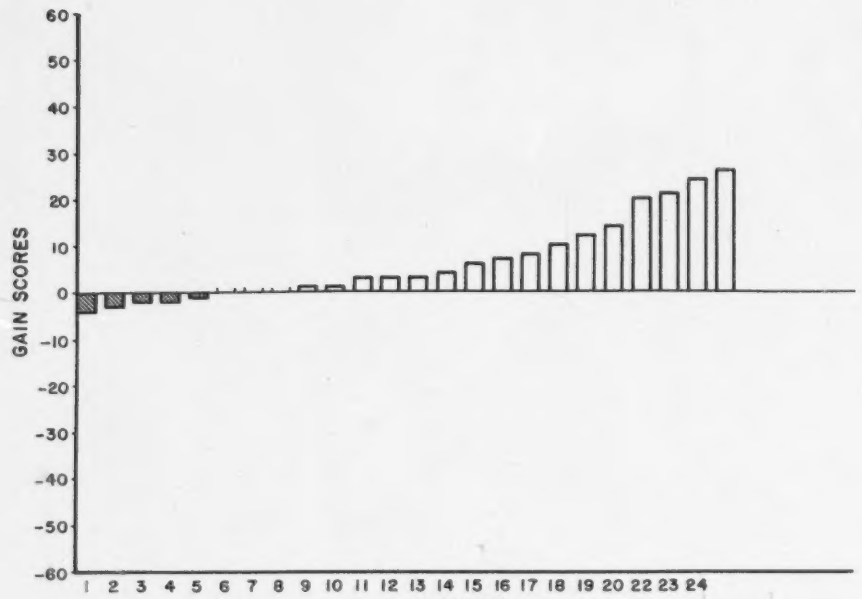


ILLINOIS CONTRAST

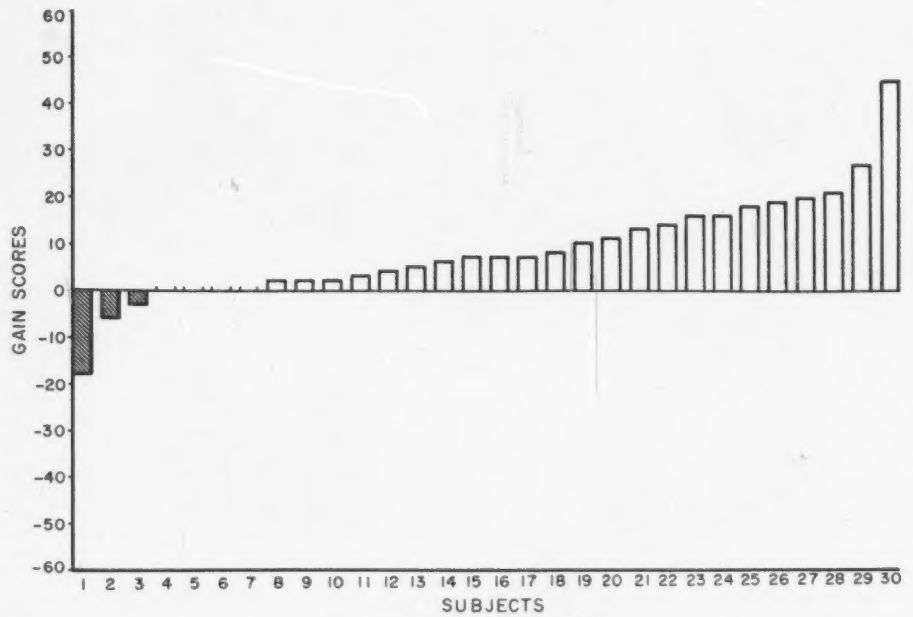
FIGURE 13.

SUBJECT BY SUBJECT GAIN SCORES:

PARSONS LANGUAGE SAMPLE



ILLINOIS EXPERIMENTAL



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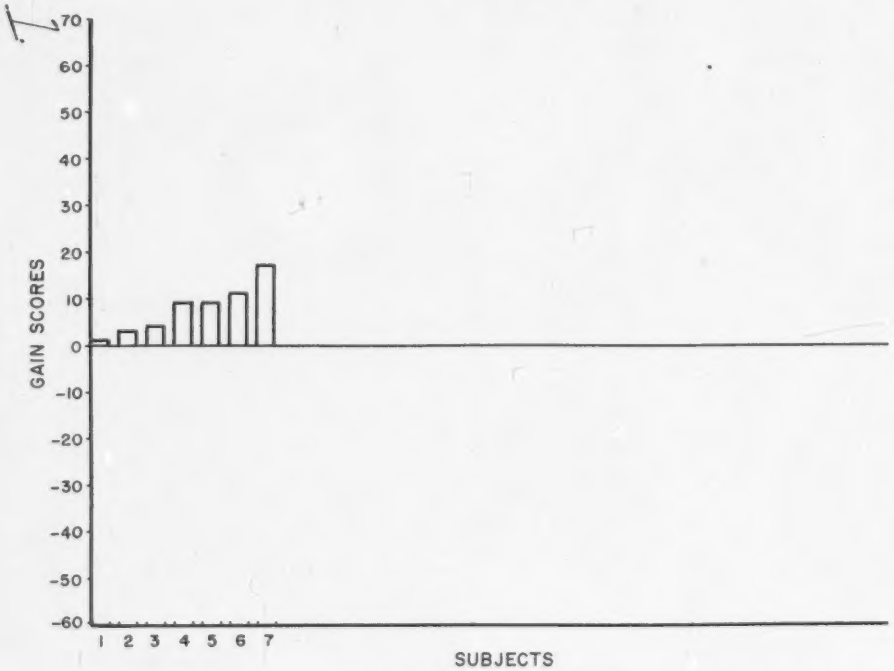

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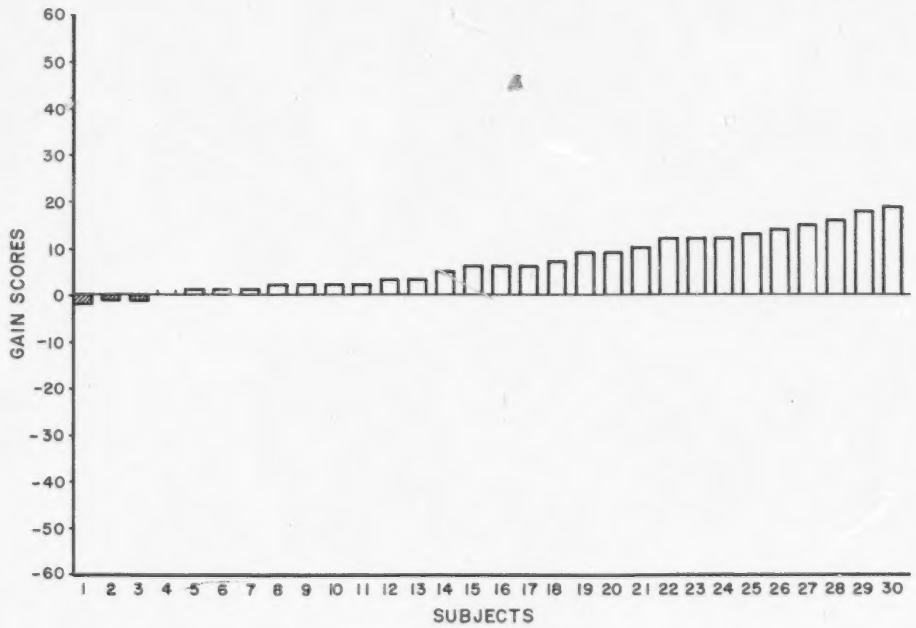

ILLINOIS CONTRAST

TABLE 6
PRE-INSTRUCTION, POST-INSTRUCTION, AND GAIN SCORES, BY SCHOOLS AND CONDITIONS:
SLI SAMPLE

		Pre				Post				Gains			
		Schools		Condition		Schools		Condition		Schools		Condition	
		$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
Illinois Experimental	1	81.67	27.74	80.03	38.40	106.00	10.39	104.83	32.12	24.33	18.04	24.00	16.24
	2	88.29	24.92			111.00	27.86			22.71	19.58		
	3	93.75	48.08			113.00	41.79			19.25	11.32		
	4	54.50	36.30			86.17	27.32			31.67	18.29		
Kentucky Experimental	5	32.33	39.27	52.10	43.41	55.11	48.77	63.70	45.54	22.78	19.98	11.60	22.07
	6	68.54	34.44			72.73	40.28			4.18	17.06		
	7	42.67	55.90			43.67	49.15			1.00	27.97		
	8	65.50	48.56			88.25	46.35			22.75	21.91		
Illinois Contrast	9	110.44	34.96	100.23	37.04	122.00	26.58	109.10	34.60	11.56	11.23	8.87	11.45
	10	89.20	47.00			104.00	45.23			14.80	10.99		
	11	87.78	34.74			93.50	38.59			5.78	13.64		
	12	111.00	35.93			116.14	28.33			5.14	8.15		
S.L.I.	13	98.57	34.34	98.57	34.34	113.57	26.82	113.57	26.82	15.00	26.26	15.00	26.26

TABLE 7
PRE-INSTRUCTION, POST-INSTRUCTION, AND GAIN SCORES, BY SCHOOLS AND CONDITIONS:
PEABODY PICTURE VOCABULARY TEST MENTAL AGE SCORES

		Pre				Post				Gains			
		Schools		Condition		Schools		Condition		Schools		Condition	
		$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Illinois Experimental	1	24.67	3.21	30.92	7.56	31.00	26.46	34.42	9.35	6.33	5.77	3.50	5.71
	2	31.86	5.61			33.57	6.19			1.71	6.05		
	3	35.25	9.25			40.12	13.12			4.88	7.30		
	4	27.17	5.46			29.50	4.81			2.33	2.07		
Kentucky Experimental	5	23.00	5.15	27.10	7.28	26.89	10.30	31.17	11.41	3.89	8.12	4.07	7.47
	6	30.45	5.35			31.45	6.96			1.00	5.08		
	7	27.83	10.74			32.67	17.83			4.83	7.17		
	8	26.00	4.55			37.75	12.92			11.75	8.85		
Illinois Contrast	9	36.44	11.81	33.00	9.73	38.56	9.00	35.97	10.59	2.11	6.81	2.97	6.13
	10	31.60	8.29			35.00	10.37			3.40	4.98		
	11	30.44	9.84			34.33	13.33			3.89	8.18		
	12	37.86	8.21			35.43	10.50			2.57	3.36		
Missouri Experimental	13	38.14	8.80	38.14	8.80	44.71	9.99	44.71	9.99	6.57	7.04	6.57	7.04

TABLE 8
PRE-INSTRUCTION, POST-INSTRUCTION, AND GAIN SCORES, BY SCHOOLS AND CONDITIONS:
PARSONS LANGUAGE SAMPLE

		Pre				Post				Gains			
		Schools		Condition		Schools		Condition		Schools		Condition	
		$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Illinois Experimental	1	20.67	.58	32.04	15.70	33.33	4.04	38.29	11.09	6.67	3.51	6.25	8.84
	2	38.28	7.78			42.00	6.73			3.71	5.38		
	3	40.75	17.81			45.00	11.06			4.25	8.31		
	4	15.83	10.44			27.50	9.38			11.67	13.12		
Kentucky Experimental	5	15.22	15.08	24.37	15.97	23.00	22.08	32.87	20.12	7.78	8.33	8.50	11.33
	6	31.54	13.62			36.09	11.27			4.54	11.38		
	7	22.33	17.87			29.17	23.14			6.83	5.46		
	8	28.25	15.58			51.75	21.52			23.50	21.91		
Illinois Contrast	9	47.44	18.76	41.20	15.95	54.11	14.23	47.89	13.87	6.67	6.28	6.67	5.97
	10	36.00	16.87			43.20	11.48			7.20	7.69		
	11	37.00	12.40			42.00	12.00			5.00	5.27		
	12	42.28	16.03			50.71	15.55			8.43	5.94		
Missouri Experimental	13	37.71	11.41	37.71	11.41	45.43	9.25	45.43	9.25	7.71	5.50	7.71	5.50

test score differences between children in the Illinois Experimental and Kentucky Experimental Conditions approach significance (t = 1.82, 5 d.f., t.05, 5 d.f. = 2.015).

There was no difference between the gain scores obtained by subjects in the Kentucky Experimental and Illinois Contrast Schools (t = 0.54, 5 d.f.). No significant results were obtained in tests involving subjects in the Missouri class.

2. Peabody Picture Vocabulary Test

An analysis of variance of the gain scores revealed that the four groups did not differ signifcantly on the Peabody Test (F = 0.67, 2 and 9 d.f.). This result was consistent with the expectation that gains in language function would have no direct effect on a measure of intelligence.

3. Parsons Language Sample

An analysis of variance indicated that group scores did differ significantly on the Parsons Sample (F = 0.69, 2 and 9 d.f.).

Thus, the children in the Illinois Experimental Conditions learned a number of concepts, mastered an extremely high proportion of the lessons taught to them, had the greatest gain scores on the SLI sample, and did not differ from chidren in the other three conditions on gains in the Peabody and Parsons tests.

Discussion

The Developmental Phase of this project culminated in the writing of an integrated but untested pilot curriculum. One part of this curriculum, Systematic Language Instruction (SLI), was then field tested. SLI procedures and content form the nucleus of the integrated curriculum. A child's mastery of certain basic language concepts is prerequisite to his subsequent work in the Self-Help and Motor Performance areas. Thus, the results of the SLI Field Testing Phase have clear implications for the evaluation, modification, and dissemination of the Illinois Program as a whole.

The results of the Field Testing Phase substantiate the notions that naive teachers can successfully learn to use Systematic Language Instruction procedures and that retarded children can make demonstrable gains in specific language functioning based on SLI. To understand and place the results of the SLI Field Test Phase in perspective, however, it is necessary to consider certain problems related to curriculum evaluation.

Experimental Design

Because of the nature of the experimental questions and the population available for study, a strict "experimental design" was ruled out. Since the basic unit of analysis was the teacher of "trainable" or "subtrainable" retarded children, the decision was made to select existing intact classes in which retarded children are taught. Thus, the children were not selected on a random basis. The teachers also were not selected randomly. Due to practical considerations such as the interest and support of administrators, the enthusiasm of prospective experimental teachers, and geographic proximity of school to project staff, it was necessary to select from and establish mutual commitments with volunteer teachers in nearby programs.

There are many variables which might affect the results of a curriculum evaluation program. Since it was not possible to control for all these factors, one variable, intensity of supervision, was chosen for manipulation. SLI was given to nine teachers in three different states. The amount and nature of supervision varied among the three conditions. Four additional teachers served in a "contrast" (not "control") condition.

Another critical consideration was the initial pre-instruction differences in the functioning of the children across the various experimental conditions. Before instruction began, the Illinois Contrast

and Missouri Experimental children had relatively highly developed language repertoires (as reflected by scores on the SLI sample), and the Kentucky children functioned at a low level in the language area. In addition, the Kentucky children were slightly younger and earned lower scores on intelligence tests than were children in the contrast condition.

These considerations led to the decisions to (a) focus on descriptive rather than on inferential statistics, (b) use the intact classes rather than the children as the "random variable," and (c) use gain scores as a basic measure of the children's progress. An analysis of covariance was not conducted, since there was close relationship between the covariate (e.g., SLI pre-instruction scores) and the dependent variable (e.g., SLI post-instruction scores). Any interpretation of the gain scores earned by the children in the various conditions should be interpreted in light of these necessary departures from random selection and systematic control of non-treatment variables. In particular, since the classes rather than the children were used as the "random variable," the number of degrees of freedom used in the analyses of variance were conservative, such that only large differences among conditions could produce statistical significance.

Measurement

A second factor affecting the interpretation of results is the difficulty in obtaining a valid assessment of the behavioral capabilities of retarded children. The children's failures to follow directions frequently present problems. Their variability in performance from day to day makes assessment difficult. In many instances, the low level of functioning may be related to the infrequent and non-systematic use of reinforcers. In other instances, effective reinforcers for a given child may not have been identified. Another set of measurement problems is due to the measures used and variability in testing conditions. There are no standardized instruments available which measure language concept usage as it is taught in the SLI curriculum. Thus, the SLI sample was developed to reflect the children's gains in concept mastery during the instructional period. The SLI sample is not a formal test, lacks norms, and has not been cross validated. Moreover, SLI basically measures only single concepts and does not reflect the more complex language patterns taught in the curriculum.

The Peabody Picture Vocabulary Test and the Parsons Language Sample were included in the test battery because they provide measures of language functioning not directly related to SLI procedures and content. They are

relatively easy to administer individually to retarded children in a short testing session. As instruments that may partially reflect language gains due to SLI, each of these has clear limitations. The Peabody Picture Vocabulary Test basically reflects the child's ability to discriminate among objects and among actions. It is thus relevant to an even more limited sample of the child's language progress than is the SLI sample. The Parsons Language Sample has relevance to more facets of language functioning than does either of the other two instruments, but it is not standardized and its validity is unproven.

Differences in test administration further complicated the data gathering process. The pre-instruction testing was accomplished in Illinois by a group of five trained project personnel. Each of the testers learned and concentrated on only one instrument (e.g., the Peabody, or the SLI sample for object discrimination). Each tester tested all the children in the eight Illinois schools on the instrument with which he came to specialize. This same situation characterized the Illinois post-instructional testing.

In Missouri, one of the supervisory personnel from Illinois trained four testers, and these five individuals administered the test battery prior to and subsequent to SLI instruction. The testing was conducted on a basis similar to that done in Illinois.

In Kentucky a large number of testers (twelve) administered the pre-instruction battery. Each tester tested for a brief time and was then replaced by another tester. One of the Illinois supervisory personnel trained and checked out each tester before that tester administered the instruments. For the post-instruction testing, a smaller number of testers were trained, but written instructions were used rather than personal supervision, due to financial and time considerations.

It is not known to what extent these differences in tester experience and expertise between the Illinois and Kentucky testing teams may have affected in either direction the comparisons involving the children in these respective conditions.

In short, the test instrument limitations and differences in the testing teams may have had some definite though unmeasured effect on the data and thus the interpretation of the gain scores.

Teacher Behavior

A third factor which affected the results is the cooperation and interest of the experimental teachers, who were required to learn a new technology and, at the same time, unlearn much of what was previously accepted as "good

teaching" practice. New teaching behaviors had to be learned, reinforced, and maintained.

Appropriate supervision was the solution to some but not all of the problems implicit in the teacher's learning a new technology. For example, the recording of the children's passes and failures on the pretests, post-tests, and each stage of each lesson taught was important for the teachers's daily preparation. But there had to be a demonstrable "payoff" for the teachers to engage in the unaccustomed behavior of keeping such detailed records. The supervisors for the Illinois and Missouri Experimental teachers were able to intervene to a sufficient extent to convince the teachers of the necessity and benefits of recording the concept data. The teachers generally recorded the data immediately and on-the-spot. Some teachers, even under maximal supervision, tended to postpone the recording of the concept data to later in the day. But generally, these data were reliably and accurately recorded in Illinois and Missouri.

The nature of the design limited the supervisor's role in Kentucky primarily to that of responding to the teacher's questions. The supervisor was thus generally unable to initiate discussions with the teacher in order to reinforce or modify specific teacher behaviors. One result of this was that the Kentucky teachers were neither motivated to nor reinforced for the collection of reliable concept data. Some teachers recorded the information in private codes which did not conform to the general standard. Others would fill out the forms several days after having taught the lessons. The effect of these idiosyncracies was data that significantly departed from expectations. Thus, the concept data in Kentucky were not analyzed, and the gain scores assumed unexpected but unavoidable prominence in the data analysis. The plan for relating SLI gains to the concept scores across the experimental conditions was abandoned.

Daily language teaching time was another source of unexpected variability across conditions. As Table 1 indicates, the Experimental teachers in Illinois and Missouri consistently taught SLI in small groups (three to five children per group), at the same time and for a consistent period of time each day (10-20 minutes per group). In Kentucky, the sizes and composition of the groups varied considerably during the instructional period, as did the scheduling of instruction.

A final point pertaining to the behavior of the teachers is related to the question, "Did the teachers behave any differently when the supervisor and/or data collector were not present?" In Illinois, where the greatest amount of on-the-spot supervision was provided, the frequency of visits was gradually reduced as the teacher met and maintained criterion performance. This procedure helped control the teachers' behaviors to a certain extent. However, at least one Experimental teacher in Illinois was on several occasions observed to be unprepared when the observer made

unannounced visits. And, on these occasions, when she was able to gather the appropriate materials, she often either taught the children without using SLI procedures or content, or she taught SLI for an extremely brief session. The Illinois teachers were visited by a supervisor from one to three times per week. The Kentucky teachers were visited only once a month. The Missouri teacher was not visited at all. It is not possible, therefore, to state unequivocally that all Experimental teachers were teaching SLI daily, much less that they were teaching SLI appropriately each day.

Despite the limitations stemming from the design and selection of subjects, the difficulties in measurement, and the inconsistencies in the performance of teachers learning a new technology, the results provide satisfactory answers to the questions posed.

Can teachers not previously exposed to SLI learn to implement the curriculum effectively? If so, under what conditions?

In the Illinois Experimental classes, teachers were supervised in their classrooms several teaching sessions a week. Under these conditions, they learned relatively quickly how and when to reinforce the children's responses and when not to reinforce them. It was not difficult for teachers to learn when to refrain from reinforcing correct responses during pretest and posttest situations and incorrect responses during instruction. In contrast, it was far more difficult to train the experimental teachers to reinforce at a high rate contingent on the child's responses during instruction.

Observation confirmed that all four Illinois Experimental teachers met the supervisor's informal criteria pertaining to ther mastery of other aspects of SLI procedures. They chose materials appropriately, gave pretests and posttests with minimal inflection and no assistance to the child, administered the proper correction procedures, and required the child to meet the established criterion at each stage of instruction. Thus, the availability of a written curriculum, and the presence of a supervisor to shape her behavior, enable a teacher to learn SLI technology in an effective and efficient way.

In the Kentucky Experimental classes, teachers were given the written curriculum and occasional (once a month) access to a consultant who could answer their questions but could not initiate any comments to modify or reinforce their teaching behaviors.

Observations of the teachers who did not receive supervision indicated that their performance did not meet that of those teachers who did. For

example, the Kentucky teachers did reinforce the children more frequently than they previously had; however, their reinforcement was seldom immediate or contingent on children's specific correct responses. In interviews, most teachers indicated that they read the materials several times before instituting the SLI program.

Although teachers generally followed the procedures as they interpreted them, lack of information in some instances led to restructuring or abandoning certain aspects of the curriculum. For example, one teacher initiated the program in a 1:1 situation with most of her children, then abandoned the pattern and treated the class as a group. In other instances, critical elements of the reinforcement program, such as immediacy and consistency, were not maintained. Some teachers discontinued daily recording of children's responses immediately after they were emitted. Other teachers did not maintain daily language instruction.

These deviations from the written curriculum highlight the difficulties which occur when a teacher is presented with new teaching techniques and expected to implement them without assistance.

Two conclusions are suggested from the information obtained under this condition. First, the teaching materials must be programmed much more precisely. When a teacher fails to carry out effectively that which has been programmed, the written program must be carefully examined, clarified, reorganized, and material added and deleted as indicated. A teacher, follows exactly the same course when a child has difficulty in learning what she has programmed for him. Secondly, the results provide a strong basis for the notion that a teacher must receive systematic and supervised instruction (and reinforcement!) on-the-job in order to implement a new curriculum successfully.

In the Missouri classroom, the teacher had the written curriculum and access to a SLI consultant in Illinois via weekly telephone calls and letters. Occasional videotapes of teaching sessions provided the Illinois staff with some feedback concerning her performance. Observation of the videotapes indicated that she was able to meet the three formal criteria concerning reinforcement of responses and the other informal criteria concerning SLI procedures. The implication is that when frequent face-to-face training and supervision is not possible, long-distance communications with a teacher provide a much less desirable but nevertheless workable alternative. Possession of the written materials alone is much less likely to change teacher behavior than is personal or long-distance communication.

Can children make demonstrable progress under SLI?

The children receiving SLI learned an average of 19 concepts. They learned 86.7% of all the concepts taught to them, i.e., those on which they failed the pretest. This result is unusual in view of the high rate of failure which retarded children typically experience in classroom instruction. The success rate may be attributed to systematic instruction, contingent reinforcement procedures, errorless learning, and the content and organization of the language curriculum.

The children in the Illinois Experimental classes made an average gain score of 24 points on the SLI sample. The children in the Kentucky condition gained 11.6 points, and the Contrast children 8.87 points. Thus, SLI, when appropriately taught, provides effective means for teaching retarded children specific language concepts.

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

Few curricula exist detailing specific procedures for teaching the young retarded child basic skills in language, self-help, and motor performance. The purpose of this project was to develop an integrated program indicating specifically what parents, teachers, child care staff, and others say and do in teaching these skills. During the developmental phase (September, 1967 - August, 1969), integrated curricula in these areas were developed through interdisciplinary collaboration in an instructional program for ten Down's Syndrome children in residence at an Illinois Department of Mental Health Zone Center. The teaching techniques included task analysis, behavior modification, systematic language instruction, and errorless learning.

During the field testing phase (September, 1969 - August, 1970), the Systematic Language Instruction area of the curriculum (SLI) was tested in nine classes for "subtrainable" and "trainable" retarded children in three different states. Four teachers received intensive training and supervision, and four others received minimal supervision relying primarily on the written curriculum. One teacher was supervised through long-distance contacts, i.e., telephone calls, letters, and videotapes. Four contrast teachers used other curricula. Data indicated that (a) teachers not previously exposed to Systematic Language Instruction techniques, given intensive supervision, understood and effectively used SLI, and (b) retarded children exposed to SLI techniques significantly exceeded the gains in mastery of a set of language concepts made in the same period of time by retarded children not exposed to SLI. It is recommended that a number of demonstration centers be developed on a gradual and systematic basis for the purposes of dissemination, training, further field testing and evaluation, and revision of curricular material in all three areas of instruction.

Limitations

The Illinois Program was intially developed on the basis of experience with ten Down's Syndrome children whose ages ranged from four to seven and whose I.Q. scores ranged from approximately ten to forty-five. The Illinois Program is both new and experimental. Moreover, the Self-Help Instruction and the Motor Performance and Recreation Instruction

sections have not been field tested or evaluated with populations other than the initial experimental group of children. The Systematic Language Instruction section has been field tested and was found to be effective with children enrolled in nine classes for "subtrainable" and "trainable" retarded children. Nevertheless, the language curriculum has been used with only a small number of retarded children within a rather narrow range of chronological age, mental age, and I.Q. scores.

In both the developmental and field testing phases of the project, the children were screened for sensory handicaps. At present, the effectiveness of the curriculum with children having vision and hearing impairments is unknown. Additional investigation is needed to determine the range of populations to which the Illinois Program, either in whole or in part, may in fact apply.

A further limitation of the curriculum stems from certain conditions under which the experimental teaching was conducted. The child-staff ratio in the Developmental Phase was exceptionally low (generally not exceeding 3:1 in instructional situations). During the Field Testing Phase, the program appeared optimally effective only when a teacher's aide was present to attend to those children not receiving SLI instruction. How effective the Illinois Program would be and to what extent modifications would be necessary in settings in which the child-staff ratio is high or in which there is no teacher's aide have not been determined.

Implications

There are several implications which this project may hold for future work with retarded children. Chief among these is the concept of action-oriented-program development as a viable means for generating instructional procedures for teachers. This project was conceived as an interdisciplinary program development project. Unfortunately, this kind of activity has not been entirely understood nor accepted by many individuals in the academic community who have continued to view the project as a more traditional "research" effort which stressed hypothesis testing and statistical evaluation.

This project also suggests that interdisciplinary program development can be accomplished through mutual cooperation and compromise. Unless those who are collaborating have a sincere interest in the project and mutual respect and trust, interdisciplinary effort can be both an unpleasant and an unproductive experience.

Another important implication of this project is that retarded children can learn if the instructional objectives and procedures are programmed carefully and implemented properly. The application of criterion teaching, task analysis, reinforcement procedures, correction procedures, errorless learning, and systematic instruction in small groups seems to hold promise.

This project further stresses the need for more precise procedures for evaluating language, self-help, and motor performance behaviors. There is need to identify clearly which behaviors are relevant for various tasks and then to develop techniques for assessing these behaviors.

The need for training parents, teachers, aides, child care workers, and recreation personnel was present throughout both the developmental and the field testing phases of the project. The implication here is the need to create vehicles for providing teachers with pre-service and in-service training, and for providing parents with support and family instruction. This may be accomplished through regional demonstration centers, films, methods books, curriculum guides, supervision, in-service workshops and new approaches in our teacher preparation programs.

In summary, the data and observations during the field testing program indicate that the Systematic Language Instrucional Curriculum can be understood and mastered by teachers and that retarded children can learn specific skills and concepts under this system. It should be noted that neither the Self-Help nor the Motor Performance Curriculum has as yet been field tested.

Recommendations

The next logical step is to disseminate the entire curriculum, with provisions for training, supervision, and evaluation. In order to provide for a mechanism of distribution which would (a) meet the special education needs of retarded children, (b) provide for ongoing evaluation and revision of the curriculum, and (c) maximize continued feedback to project personnel, it is recommended that a third phase be devoted to <u>dissemination</u> <u>and</u> <u>demonstration</u> of the Illinois Program.

One basic long-range goal of this third phase would be the development of a number of demonstration centers throughout a state in which staff would be trained in the implementation of the Illinois Program. Through workshops, seminars, newsletters, visitation, supervision, and ongoing evaluation, curricular materials could periodically be distributed, revised, and up-dated as indicated. For example, the State of

Illinois might be established on a zone-by-zone basis, with a single demonstration center within each zone. The various zone centers would serve as either the physical locations of programs or as resource facilities for the mobilization and development of such programs.

The model demonstration centers would serve the following functions:

1. Every educational, institutional, and home setting in a state would be within approximately 125 miles of a demonstration center. This would provide maximal access for administrators, teachers, and parents to learn of important new developments in educational programs for retarded children. Geographic proximity and access to trained personnel would promote maximum community participation.

2. Such a statewide instructional network could provide an excellent mechanism for ongoing field testing, evaluation, and revision designed for further development of curricular material. A system for disseminating and sharing information so that the curriculum could effectively be adapted to a variety of educational and home settings would also be developed.

3. Through consultations, workshops, newsletters, and other means of communication, the demonstration centers should serve as catalysts for the development of various community educational programs for retarded children (e.g., day schools, state hospitals, etc.).

4. The research/training component would be an integral element in the demonstration and dissemination phase, so that the Illinois Program may increase in scope and effectiveness as revisions are made based on the reactions of teachers, parents, and children to their participation in the programs.

5. A model program for training teachers and parents to instruct retarded children will be developed for use in other states.

In conclusion, the Illinois Program should be viewed as an experimental program, which is intended to bridge the gap between research and practical application in the education of retarded children. It is our hope that the curriculum which has been developed will serve to stimulate others to go far beyond what has been done here and develop new and more effective methods for teaching retarded children.

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Appendix

APPENDIX

Systematic Language Instruction Interview Format
(April, 1970)

A. Curriculum Evaluation

1. What was your immediate reaction when you were asked to participate in the field testing program for this experimental curriculum? How do you feel about this now? Have your feelings changed?

2. To you, what are the unique characteristics of Systematic Language Instruction

(a) as a method of teaching?
(b) as content to be taught?

3. What was your reaction to the curricular material when you first examined it? What sections were clear? What sections were unclear, ambiguous, or difficult to understand at that time?

4. What if any difficulties did you have later on in following the lesson plans? Did you find that SLI programming was overly rigid? To what extent and in what ways were you able to adapt the curriculum to your own unique teaching methods?

5. What are the strengths and weaknesses of the curriculum reinforcement procedure? The correction procedure(s)? Do you plan to reinforce and correct on the same basis in the future? Under what conditions, if any, would you depart from these procedures?

6. Did you use the pretest and posttest procedures specified in the curriculum, or did you examine on a more informal level? Why? On what basis did you pretest and posttest (i.e., for a few days at a time? on a concept by concept basis?)?

7. Did you review on a systematic basis those concepts the children had learned? Why or why not? If so, how frequently? How helpful was this review procedure to the children's retention? How frequently did children who had passed the posttest fail to meet criterion for a concept in the review sessions?

8. Of what value were the Notes, Generalizations, and Discriminations at the end of the lesson plans? What use did you make of them? What changes would you make in the way they were presented?

9. In what ways was the Master Word List helpful to you? What if any changes would you make with respect to (a) the introduction? (b) categories? (c) levels? (d) content?

10. What language concepts in the curriculum were not appropriate for your children? What concepts were too advanced? Too elementary? What concepts were not included that you feel should have been included in the curriculum?

11. Did you incorporate the SLI material into other class activities?

B. SLI Theory

12. To you, what is behavior modification? What previous exposure have you had to behavior modification? What is its relevance to the curriculum? How did you learn it?

13. What is the purpose of pretesting and posttesting each concept for each child? What is the purpose of the pass criterion (three consecutive correct responses in a set of four trials)? Should future teachers using SLI use this same criterion or should they use a different one?

C. Teacher Responsibility

14. How did you decide (a) how to group your children for instruction? (b) what concepts to teach? (c) when a child mastered a given concept? Did the curricular material provide sufficient information for these kinds of decisions?

15. How much time per day did you spend in preparation for the SLI lesson plans

(a) in the early stages of the program?
(b) in the last month or two?

16. Were the materials required for your using the SLI curriculum easily available? What if any difficulties arose? How did you resolve them?

17. Your keeping accurate records of each child's progress was important to the research staff.

(a) Were you given adequate instructions for this task?
(b) How much time was required for this task per day?
(c) In what ways were these records useful to you?
(d) Could you have been as effective without these records?
(e) What changes would you make in the Children's Record Sheet forms?

D. Our Usefulness/Future Training Activities

18. What was the function of the supervisor? Which of her activities were most helpful? Which were least helpful? Were there things she did that you would have preferred she had not done? What did she not do that you would rather she had done?

19. What was the purpose of the data collector's presence in the classroom? Did his presence disrupt the children's performance? To what extent? Did his presence (absence) modify your presentation on a given day? To what extent? Was there sufficient feedback to you on the data he collected?

20. In what ways would it have been helpful had an SLI consultant demonstrated teaching procedures? How frequently and over how long a time interval would this be most effective?

21. Would a film illustrating teaching procedures be of assistance to a teacher learning SLI? What specific kinds of activities should be demonstrated in such a film?

22. How should teachers be trained to use SLI in the future? What specific recommendations would you make for future teachers having the written curriculum but little or no access to an SLI consultant?

23. What are the limitations of the SLI curriculum? For example, what are the (a) optimal and (b) maximal sizes of the instructional groups you would suggest? How desirable is the presence of a teacher's aide in the classroom? For what purposes? What age range of children could reasonably be expected to be able to benefit from SLI? What IQ range? What about other kinds of handicapped children (deaf, blind, etc.)? What about non-retarded (normal) children?

24. Will you use the curriculum with your children next year? Why or why not? If so, what specific changes will you make? What additional areas should be included? If no, under what if any circumstances would you consider using SLI in the future?

25. Please make any other comments you feel would be helpful

(a) to us in our efforts to evaluate and revise the curriculum, and
(b) to other teachers who will use our curriculum in the future.